DOCUMENT RESUME

ED 107 020 EC 072 489

AUTHOR	Mayer, William V., Ed.
TITLE	Planning Curriculum Development: With Examples from Projects for the Mentally Retarded.
INSTITUTION	Biological Sciences Curriculum Study, Boulder, Colo.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	Jan 75
NOTE	102p.
EDRS PRICE	MF-$0.76 HC-$5.70 PLUS POSTAGE
DESCRIPTORS	Conceptual Schemes; *Curriculum Design; *Curriculum Development; Curriculum Evaluation; Educational Objectives; Exceptional Child Education; Financial Policy; *Guidelines; *Mentally Handicapped; *Models; Staff Role

ABSTRACT

Presented are guidelines based on five federally funded projects for planning and developing curriculum for the mentally retarded. Discussed are the initial steps of identifying the target population, needs, and objectives. Examples of curriculum design, including the rationale and conceptual framework, are provided. Considered are elements of staff selection, product planning (including scheduling and feasibility review), and field test arrangements. Procedures for training staff, field test site personnel, and college and university staff are reviewed. Analyzed are such evaluation aspects as scope, design, and data treatment. Described are dissemination and implementation procedures, including predictability in teacher acceptance, copyrights, and royalties, and commercial channels. Financial considerations, such as independent vs. dependent fiscal status, and sources of project funds are examined. Described are project management issues, including policy procedures and personnel roles. Also provided are brief descriptions of the five projects from which the guidelines are drawn. (CL)

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PLANNING CURRICULUM DEVELOPMENT

With Examples from Projects for the Mentally Retarded

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Acknowledgments

Without the generous help of each of the individuals who became a contributing author, this book would not have been possible. Without the support and advice of John E. Davis and his colleagues in the Bureau of Education for the Handicapped, the work would not have had its present structure and emphasis. And without the contribution of Don E. Meyer, who accepted the responsibility for drafting one manuscript from many, a collection of eight fragments might have been published in place of a book.

William V. Mayer, Editor
Boulder, Colorado
January 1, 1975

Composition by Melissa Cooley on A-M Varityper Phototypesetter
Artwork by John Evans and John Thornton
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Design and camera copy by John Thornton

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This work was developed under a grant with the U. S. Office of Education, Department of Health, Education and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of that Agency, and no official endorsement should be inferred.

Printed in the United States of America

Introduction

When society evolved and the first teachers were appointed, probably they were asked to train children as hunters. Instruction was carried on without formalities about objectives and skills. Evidence has been found, however, that a rudimentary curriculum may have been in use, for hunting at times required the organized efforts of both sexes and instruction in weaponry, strategy, topography and weather. Methods for the hunt ranged from stalking to encirclement and stampede.

As measured by survival, the system worked, and it established prototypes for several elements that continue to be refined in education today:

- behavioral objectives
- skills and subskills (fashioning weapons, stalking and trapping prey, setting up a stampede toward a cul-de-sac or over a cliff, butchering and transporting meat and processing hides, curing and storing meat)
- sequencing of steps
- field test (but usually in a summative sense)
- evaluation

Though obviously organized and pre-planned, the methods were somewhat limited by the least efficient learner's grasp of them when a mass hunt was on. The results could be hit-or-miss, in that Piaget's progenitors, as teachers, could not have had his insights into childhood development and learning. The environment was harsh, and cognitive development subordinated or recognized only in relation to a not-quite defined (if at all definable) "animal" sense of survival.

For the 20th and 21st centuries, education is no longer any better characterized by *what* is taught or *what* is learned than by *how* the teaching and learning may best be anticipated to take place together. Constant reassessment leads to further change in even the most current teaching methods. The maximum in achievement is sought for each child so that he or she will be able to participate in society free from artifacts of limited opportunities during the developmental years.

What should the learner do? What should be learned as a consequence of doing it? These are persistent questions that depend for their answer on who each learner is. For only from a close knowledge of each child can the decisions supporting a boy's or girl's right to an equal opportunity to learn be made—namely,

1. determination of which experiences will best contribute to the child's development
2. organization of these experiences for their peak effectiveness, and
3. selection of instructional strategies best suited to the child's responsiveness and participation

Making these decisions and building appropriate instructional programs is the process of *curriculum development*.

Instructional programs will be different for children of different ages and learning characteristics. The curriculum developer's interests will be specific to each program. The developer's skills, however, will be applicable to all programs: principles and procedures followed for one will be followed for another. The differences arise in the specific demands made by the cognitive levels and learning characteristics of the target population of children, and by the subject or content of the curriculum.

Designing a new curriculum and modifying an existing one both are significant in their concern to the developer. Even the decision of a single classroom teacher for a change in content or strategy, somewhere along the way during a school year, can be an important modification of the curriculum.

The implication is that the developer's skills and the development process apply to many different situations. Hence the "rules" are not rules at all, but guidelines. They are offered to help the person charged with responsibility for instructional programs choose or create specific curricula. And they are designed to fill the void of an easily understood outline of practical and theoretical questions in curriculum development.

The book was written as a sharing of successful experiences by developers who sometimes proceeded on a common path but just as often on somewhat different ones. Wherever their paths met or crossed they stopped to consider what brought them together—and agreed on guidelines. As their paths

(continued)

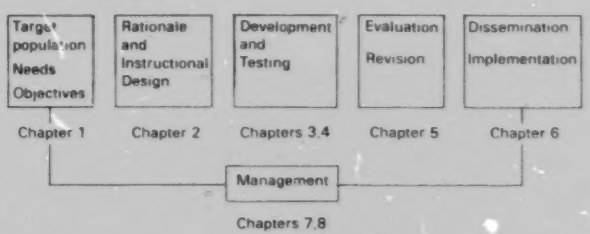
diverged again they called on examples from their different curriculum projects to illustrate variations in their applications of the guidelines.

The authors' projects all were restricted to, or included, special education curricula for the mentally retarded*, and this book is primarily concerned with curriculum development for mentally retarded children.** All of the projects used as examples have been funded by the Bureau of Education for the Handicapped, U.S. Office of Education, Department of Health, Education and Welfare. This book is similarly funded by the Bureau, and with the authors' surprised appreciation for the spirit of inter-project communication it has brought about among them.

The book engages curriculum planning in sequence from its earliest stages to the final release of a developed curriculum with its "product" (teaching and learning materials—printed, filmed, and otherwise produced). The emphasis given the product is simply explained: few curricula can be made operational without student learning materials, and almost none without detailed instructional plans. At a lesser stage of development new curricula may be proposed for discussion in the colleges and universities which train instructors, but will be of little use to the schools or the populations of students they serve.

The need for developed curricula *with products* is especially great in special education. There, mentally retarded children confront the instructor with difficulties beyond those of all other regular and special education students except the emotionally disturbed. The nature and structure of learning programs vary with the nature and severity of the children's disorders or disabilities. A wide array of instructional strategies is required, and behavioral management is the key to the success of all of them. Child-by-child and day-by-day considerations complicate instruction and load the curriculum developer with special conditions to contend with. In some ways these requirements of special education transcend curriculum development as otherwise conceived. They illustrate the need for a book written primarily for persons interested or involved in special education.

A brief scheme of the development model for the book follows:



In each chapter, marginal annotations and examples from the authors' projects keep a reader on track, so that use of the book requires only two steps: examination of the table of contents for the chapter, and that chapter's marginal annotations for the topic.

Apart from special educators and curriculum developers as a primary audience are others to whom a book on curriculum planning is "not that common" and of pointed interest: educational administrators who must support and help plan curricular studies and revisions; classroom teachers who wonder how best to go about seeking change; officers of foundations or state and federal agencies who are asked to approve funding for curriculum development projects; parents who seek insights into how school programs are planned; and interested students as tomorrow's parents, teachers, and curriculum developers.

If the models presented for curriculum development appear to many as "a grand plan" that is beyond achieving, then it is sufficient that the bare elements, or comparable ones, be considered in a scaled approach that is consistent with the time, budget, and human resources that will be brought to bear on a curriculum's emergence. Starting from the opposite extreme has too frequently created a stand-off of no time, no money, and their intellectual equivalent in planning.

Nothing is intended to suggest that there is one best way, but only that curriculum development involves a special awareness.

*Thumbnail sketches of the authors' projects appear on pages 86-89.

**Chapter 1 is target population-directed because "target population" is its topic, but except for illustrations the rest of the book may be read as easily for uses with other populations.

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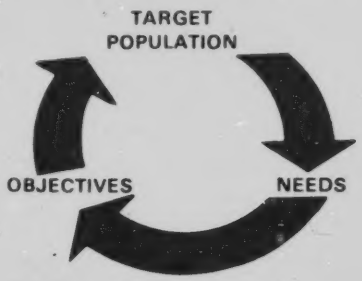
CHAPTER **ONE**

First Steps: Target Population, Needs, Objectives

Everyone is familiar with the classic question "Which came first, the chicken or the egg?" Curriculum developers face a similar puzzle in three parts, as below: It is easy to start anywhere and get to the other two points. But no matter what the starting point, the cycle must be followed several times, each time uncovering more specific characteristics of one of the three parts with the help of information carried forward from the other two.



As an example, the State Supreme Court of Pennsylvania directed that all mentally retarded children receive a free public education. The State Department of Education began its analysis by citing instructional programs for these children as a known objective. The first cycle of information showed:

Target Population: mentally retarded children
Need: free public education (a court-determined need)
Objective: instructional program

The global population of mentally retarded children ranged from educable to profoundly retarded. Their educational needs were soon determined to range from career skills to the simplest daily living skills. Attainable objectives had to be considered separately for several subpopulations of the mentally retarded. Thus, from any part of the cycle used as a beginning point, successive examinations of all three elements are required to accommodate their interaction.

Rather arbitrarily, this book considers the three beginning topics in a sequence of

1. Definition of the target population (specifying characteristics of the group)
2. Determining the basis for needs (court-determined, developmental, or other) and identifying these needs
3. Setting specific objectives in measurable, behavioral terms.

The Target Population

Specifying the target population is important to any curricular consideration—for a teacher or curriculum coordinator in one school system or for a curriculum developer in a large university or other curriculum development center. No other step more quickly orients a reader or reviewer to a curriculum plan.

Specifying a mentally retarded population presents special problems. Most causes of mental retardation remain unknown or unclearly understood. The basic definition adopted by the American Association on Mental Deficiency (AAMD) is consequently descriptive (though diagnostic measures are possible in identifying individual students):

> Mental retardation refers to significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior, and manifested during the developmental period. (Grossman, 1973).

The upper limit of the developmental period is placed at 18 years of age, and both other conditions,

a) significantly subaverage general intellectual functioning, and
b) deficits in adaptive behavior,

are requisites. Operationally, "significantly subaverage general intellectual functioning" is determined as two standard deviations below the mean on normed individual intelligence tests. However, unless deficits in adaptive behavior (in or out of the classroom) are also evident, the terms of the definition are not met.

What does all this mean?

First, that a child of low IQ who adjusts to regular classes and keeps up with minimal class requirements is not considered retarded.

Second, that a cause of retardation is not specified; if a significant number of children in a particular neighborhood require special education in terms of the definition, it is then the obligation of schools to provide it. (Ethnic, economic, and biological factors thus become the concern of research, while the children become the concern of education.)

Third, that in leaving the developmental years, a young adult may "graduate" from a retarded category if acceptable behavioral adaptations have been acquired. (An adult who manages to hold a job and is a responsible member of his community is not considered retarded.)

These and other examples highlight that

a) most causes of mental retardation are either unknown or incompletely understood (Grossman, 1973)
b) the entire definition is closely related to levels of tolerance of the community and of society (Ellis, 1963; Clarke, 1958)
c) a disproportionate representation of certain ethnic groups appears in special education classes in many schools (Dunn, 1973)

Within the definition, learning levels for mentally retarded children may be tentatively distinguished for school use by

1. IQ testing (Grossman, 1973)

Levels of Retardation	Obtained IQ Measure
Mild	52-68
Moderate	36-51
Severe	20-35
Profound	?-19

2. Diagnosis of functional ability or levels of cognitive development (Piaget and Inhelder, 1958)

Normed tests for the latter use are not generally available (except for the Thorndike-Hagen-Lorge CAT *group* tests) but are under study and in early trial use (DeAvila and Havassy, 1974; Gray, 1973, 1974a, 1974b; Steele, 1973a, 1973b).

In schools and other institutions, the categories commonly used to identify subgroups of retarded children are *educable*, *trainable*, and *profoundly* (or sub-trainable) retarded. Recommendations for standardization of terms according to the AAMD usages have been made (Grossman, 1973; Dunn, 1973), but until a standardization occurs the following equivalence of terms is useful:

AAMD Levels	IQ Range	School Usages
Mild	52-68	Educable
Moderate	36-51	Trainable
Severe	20-35	Trainable-to-Profound
Profound	?-19	Profound

To identify a target population of the mentally retarded for a curriculum plan or proposal, at least the following characteristics should be cited:

1. Age range
2. Entry characteristics
   a. IQ range
   b. learning characteristics
   c. levels of cognitive development as compared with levels established for children of normal intelligence
   d. specific skills levels
3. Adaptive and nonadaptive behavioral characteristics (affective and psychomotor behaviors)

If the curriculum plan is restricted to one or a few school systems, further information may be added:

4. School records
   a. previous study records
   b. attendance records
   c. health records
   d. background assessments
   e. home history

Conceivably **4d** and **e** could also apply (as generalized assessments) to a curriculum plan originating from a university-affiliated or other large development center. That is, a curriculum on city-living skills proposed for inner-city mentally retarded children would recognize that the majority of the target population currently comes from poorer socio-economic environments.

Determining the Basis for Needs; Identifying Needs

Needs, whether for the mentally retarded or any other children, submit to many interpretations. Theoretically they are internal to the individual and are a subject of behavioral research. But the established research is fragmentary, and in practice students' needs are "identified" or "determined" for them by others. As a result, the statements of needs are contaminated by prior goal-setting, as illustrated by the cyclic character of *target population* →*needs* →*objectives* (page 1).

Assuming that a child of school age is realistically acted upon by outside influences, internalized needs increasingly have externalized components: indeed, many needs are learned. With much justification, then, needs are approached in a context of social interaction and defined in a variety of ways:

1. behaviorally-developmentally
2. by law (as in the court-determined need on page 1)
3. by reflection of teaching problems with (or learning problems for) the target population
4. by reflection of occupational and daily living demands made by society
5. by target population characteristics in relation to a theoretical model of learning

The experience and evidence of each approach should be considered as a choice is made. Where behavioral-developmental needs are well established by research (needs such as identification, communication, etc.), they should obviously influence the needs statements—as must all needs determined by law. Then the needs statements should be organized in obvious reference to the model of learning or the objectives of the curriculum being planned.

All available resources should be explored in studying and identifying needs:

- search of the existing literature
- survey of schools and personnel involved with the target population
- communication with researchers and theoreticians
- experimentation and research which can be made a part of the curriculum development plan

The choice of words to express needs should be cross-referenced to others used by different researchers, theoreticians, and practitioners to avoid ambiguity—e.g., *respect* (self-respect? self-confidence? or, the respect of others? respect *by* others? acceptance?).

Of all the requirements in a curriculum plan, defining needs can prove especially hazardous or arbitrary unless the resources of the educational

community and of research are fully exploited. Final statements may be communicated (for criticism) to a number of authorities in behavioral research, learning theory, and special education for the target population.

Setting Specific Objectives

To serve as a framework within which to set objectives, the meaning of "curriculum" in a developmental plan must be defined:

1. Subject area(s) and goals
2. Scope
   - **a.** total school experience for one-to-all grade levels; or
   - **b.** one or two subject areas for one-to-all grade levels; or
   - **c.** certain skills or aptitudes within a subject area
3. Developmental intent
   - **a.** revision of existing curriculum
   - **b.** new curriculum
     - (1) replacement of existing curriculum
     - (2) alternative to existing curriculum
     - (3) no pre-existing curriculum (in the given subject area for the target population)

A brief description should be provided by the developer of a curriculum to establish whether (as examples)

- the total junior high school experience (as in **2a** of the outline above) is the subject of the plan; or
- the elementary school reading program (as in **2b**) is the subject; or
- a curriculum element such as word-recognition in learning to read (as in **2c**) is the total scope of the developmental effort

Whether the curriculum or curriculum element is revised or new should be included (as in Point **3** of the outline).

Against this background of explanation of subject, scope, and developmental intent, the overall aims of the program can be outlined. Usually the aims can be relatively few and briefly stated. They should be carefully thought out, however, because they are the expressions of intent against which all more specific objectives should be tested. The next step beyond these aims or goals demands a built-in accountability in the specification and setting of the *objectives* in a measurable way:

1. Each objective should be related to a need as expressed for the target population.
2. Each should be essential to realizing an aim of the program.
3. All collectively should be sufficient to realize all aims.
4. Each should be stated
   - **a.** in terms of the student's behavior
   - **b.** as *specific, measurable* behavior.

Writing each objective is a separate challenge. By example, the following statement might be a unit aim but is unsatisfactory as an objective:

> **Aim/Objective?** Each student should recognize that the community offers services to all citizens.

Missing for the use of the statement as an objective are:

a. What kinds of services?
b. How is the student's recognition of them to be measured?
c. What is an acceptable level of recognition?
d. Under what conditions is the student to make the recognition?

Each of the four considerations may be used in planning a better objective:

a. If eight services are to be introduced and they are all offered by the police, fire, and public utility departments, the objective should say so.
b. The student should be asked by the objective to state or write the services, check them off a list or name them in response to questions, use them in writing a community "story," or otherwise provide some tangible, measurable evidence of knowledge of them.
c. The objective should state how many of the eight services (four, five, or more?) constitute an acceptable level of learning.
d. And the objective should clarify the conditions for demonstrating the learning— recall (without cues), written or oral response to questions, recognition from a list, or some other method.

A better statement of the objective, then, might be:

> **Objective:** Each student should name five or more community services and the department offering each—police, fire, or public utility—from a list of questions about eight community needs.

To deal with any problems of verbal perception, or with reading problems, the list of questions must be carefully prepared and reviewed. (Procedures for assessment and evaluation are referred to elsewhere, on pages 44-57.) Indeed, whether or not reading problems exist, an alternate statement of the objective for mentally retarded children could be:

> **Objective:** Each student should demonstrate the ability to contact police, fire, and public utility services and correctly identify circumstances when doing so.

References for preparing objectives are widely available (Gronlund, 1970; Mager, 1962; Bloom, 1956; Krathwohl, 1964). In some of these references, behavioral objectives are derived separately for

a. psychomotor behavior,
b. cognitive behavior, and
c. affective behavior.

One problem with specific, measurable objectives is brevity. When an objective is deliberately broad it is difficult to specify completely in a compact form. The attempt or result is often a compact but vague statement. A better solution is to cross-reference the brief statement to a table or list of specifications, as in the example in the table below. There the stated objective, for a target population of educable mentally retarded students, is:

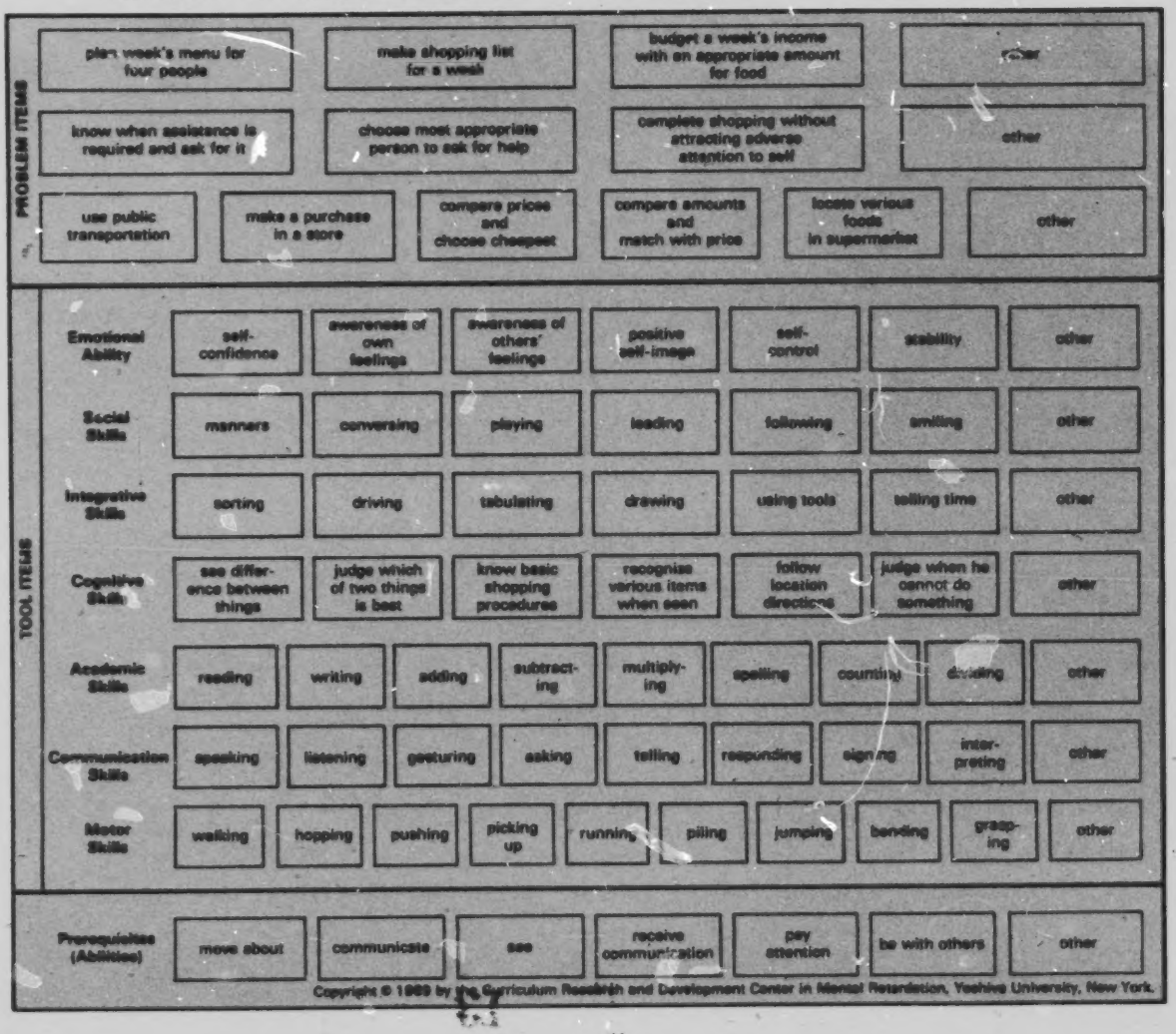
Objective: To be able to purchase a week's groceries for a family of four [subject to the tabular analysis of problem areas, skills, and abilities].

The example is drawn from the SOCIAL LEARNING CURRICULUM*, one of the projects of the authors of this book. No implication is made that the curriculum under development will teach every necessary skill but rather that it will teach and apply some (involving more detailed objectives), and assess and apply others taught in other curricula.

Obviously this example of an objective is behavioral and involves all the areas of psychomotor, cognitive, and affective skills. What constitutes a satisfactory level of performance is not indicated, but sub-objectives will establish levels of performance for parts of the task, and the entire task will eventually be assessed in progress at a neighborhood grocery store.

*The SOCIAL LEARNING CURRICULUM and its secondary-level extension POSVAP (Problem-Oriented Social Vocational Adaptation Program), developed at Yeshiva University's Curriculum Research and Development Center in Mental Retardation. For a thumbnail sketch of the project, see pages 88-89.

OBJECTIVE: TO BE ABLE TO PURCHASE A WEEK'S GROCERIES FOR A FAMILY OF FOUR



A complete list or hierarchy of objectives should be mapped out and defined for any planned curriculum and checked against needs and aims. Collectively the objectives as stated should establish the uniqueness of the proposed curriculum if possible. Otherwise, in the presence of another curriculum that meets these objectives for the same target population, the one that is being proposed will be at least in part a duplication.

Several of the authors' projects have broadened the base of behavioral objectives to include both

a) objectives for the teacher, and
b) objectives for the student

For many innovative curricula it is easily demonstrated that the teacher objectives are essential to meeting the student ones, especially when the teacher-learner interactions are not in the pattern in which most teachers have received their training.

New training needs are discussed in Chapter 4.

Recycling

On completion of the descriptions or definitions of target population, needs, and objectives introductory to a curriculum plan, a useful review of their interrelationships is provided by "recycling" them (page 1) and checking further for new information elicited at some point in response to information at another. The three considered together are the developer's approach to curriculum planning and the reader's or reviewer's later orientation to it: they resolve all uncertainties about how to begin a *written* curriculum plan or report. (Usually even a local plan must be submitted to a school district's central office or board of education, and invariably any plan developed at a university-affiliated center or other, independently organized curriculum development center will be published and distributed.)

Bibliography

Bloom, B. S., et al. *Taxonomy of Educational Objectives: Cognitive Domain*. David McKay Company, New York, 1956.

Clarke, A. D. B. and **A. M. Clarke.** (Eds.). *Mental Deficiency: The Changing Outlook*. Free Press, Glencoe, Ill., 1958.

DeAvila, E. A. and **B. Havassy.** Some Critical Notes on Using IQ Tests for Minority Children and a Piagetian-based Computerized Information System as an Alternative. Paper presented at the 1974 Annual Meeting of the A.E.R.A., Chicago, April 1974.

Dunn, L. M. (Ed.). *Exceptional Children in the Schools: Special Education in Transition*. Second Edition. Holt, Rinehart and Winston, New York, 1973.

Ellis, N. R.(Ed.). *Handbook of Mental Deficiency*. McGraw-Hill Book Company, New York, 1963, p. 238.

Gray, W. M. Development of a Piagetian-based Written Test: A Criterion-referenced Approach. Paper presented at the 1973 Annual Meeting of the A.E.R.A., New Orleans, February 1973.

Gray, W. M. The Integrated Cognitive Structure of EMH (Educable Mentally Handicapped) Children. Paper presented at the Fourth Special Invitational Interdisciplinary Seminar on Piagetian Theory, Los Angeles, February 1974a.

Gray, W. M. Development of a Written Test Based Upon a Model of Piaget. Final Report, Project No. 2-E-052, Grant No. OEG-5-72-0044(509), National Center for Educational Research and Development. University of Dayton, September 1974b.

Gronlund, N. E. *Stating Behavioral Objectives for Classroom Instruction*. The Macmillan Company, New York, 1970.

Grossman, H. J. (Ed.). *Manual on Terminology and Classification in Mental Retardation*. Special Publication Series No. 2, American Association on Mental Deficiency, 1973.

Harrow, A. J. *A Taxonomy of the Psychomotor Domain*. David McKay Company, New York, 1972.

Inhelder, B. and **J. Piaget.** *The Growth of Logical Thinking from Childhood to Adolescence: An Essay on the Construction of Formal Operational Structures*. Translated by A. Parson and S. Milgram. Basic Books, New York, 1958.

Krathwohl, D. R., et al. *Taxonomy of Educational Objectives: Affective Domain*. David McKay Company, New York, 1964.

Mager, R. F. *Preparing Instructional Objectives*. Fearon Publishers, Palo Alto, Calif., 1962.

Saylor, J. G. and **W. M. Alexander.** *Planning Curriculum for Schools*. Holt, Rinehart and Winston, New York, 1974, pp. 183-4.

Steele, J. M. Placement in EMH Classrooms. *Arranging Field Tests: Characteristics of Sites and Students*. In Formative Evaluation Report 1 for ME AND MY ENVIRONMENT. Project No. 1520-75, Grant No. OEG-0-9-152075-3720(032), Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education and Welfare. Biological Sciences Curriculum Study, Boulder, Colo., June 1973a.

Steele, J. M. *Assessing Student Abilities and Performance: Year 1*. In Formative Evaluation Report 2 for ME AND MY ENVIRONMENT. Project No. 1520-75, Grant No. OEG-0-9-152075-3720(032), Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education and Welfare. Biological Sciences Curriculum Study, Boulder, Colo., December 1973b.

CHAPTER **TWO**

Curriculum Design

A Rationale

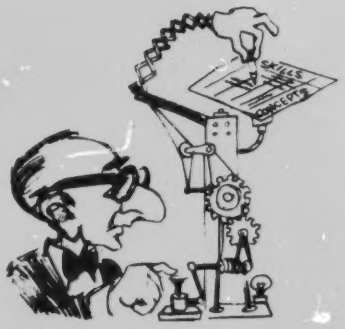
Once the target population, its characteristics and needs, and the objectives have been determined, a *rationale* for the new curriculum needs to be developed, to explain:

1. how and why it came to be proposed
2. its relation to any curriculum it may replace
3. its interrelationships with other curricula with which it will co-exist in the schools
4. whether and how it will affect existing teaching responsibilities and cooperation among teachers
5. whether and how it will affect the teacher's classroom role (teacher-learner transactions) and teacher training
6. its implications for the nature of the teacher's and students' materials
7. whether and how it will affect actual school organization (including teacher and student life-styles in the classroom/school)
8. its implications for physical facilities and equipment purchased or leased by schools

Before this rationale is considered in final form it should be documented. All related experience should be cited in the existing literature, especially to the extent that it has affected the proposed curriculum by providing sources of ideas. In a number of different ways, direct and indirect support for the rationale should be established as effectively as possible:

a. implications of educational research related to the curriculum
b. solicited opinions of specialists and experts who have examined the objectives and rationale
c. implications of the curriculum developer's own experience or research with the target population
d. precedents, if any, in other successful curricular developments, or, limitations in the success of other approaches tried (personal experience and reports from the literature)

Models for Curriculum Design



Building upon the rationale, *curriculum design* is developed separately and is usually introduced by a conceptual framework that is referred to as a *model*. The rationale for the curriculum, its scope (see Chapter 1, page 5), and the form in which the curriculum will be reflected in teaching and learning materials (textbook, or multi-media program, or individualized student learning tasks or activities in non-textbook format, etc.) have much to do with establishing the setting in which the model can be understood.

As for the forms of models themselves, they may be

1. narratives
2. charts
3. diagrams or drawings
4. any combination of the three, or
5. multi-dimensional constructions
   a. with no moving parts
   b. with moving parts showing options or replacements in the curriculum
6. still other representations

Any curriculum may have one, or more than one, model showing dimensions of the curriculum such as:

1. subject matter
2. cognitive processes involving the subject matter
3. the learner's developmental characteristics
4. organization of parts or levels within the curriculum
5. teaching strategies

Most models, including multi-dimensional ones, are represented in drawings, diagrams, and charts that can be properly positioned in sequence in the narrative for the curriculum design. Multiple copies of the curriculum plan (therefore the model, too) may be required for review by a school district's central office personnel or its board of education, or by the personnel of an agency or foundation from which a supporting grant will be sought. A working multi-dimensional model, in such an event, might be too expensive to reproduce in quantity.

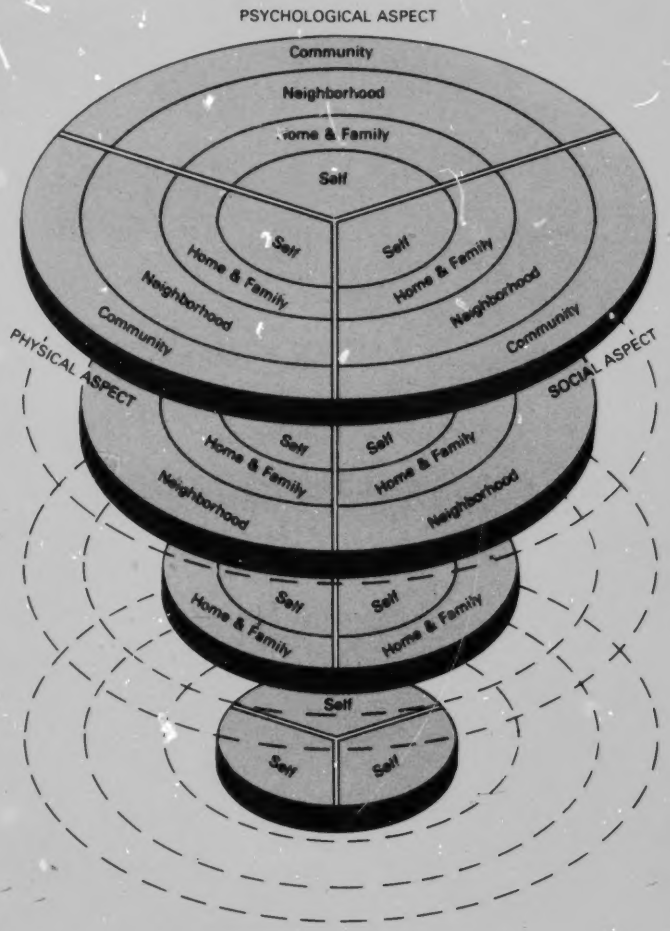
Models for the SOCIAL LEARNING CURRICULUM

The models for the projects of the authors were all represented on paper, and a number of examples will be shown.

On page 7 an objective, "Shopping for a Week's Groceries for a Family of Four," was illustrated for the SOCIAL LEARNING CURRICULUM and its secondary extension POSVAP (pages 7 and 88). The curriculum model that underlies this and other objectives of its kind for the SOCIAL LEARNING CURRICULUM is an "expanding environment" model, shown on the following page. It involves both the learner's developmental characteristics and parts or levels within the curriculum—since these two correspond for the curriculum. Levels (expansions) of the environment are not illustrated beyond the community level because evidence indicates that educable mentally retarded children do not have to operate beyond the community level. But the model can be considered open-ended; it is the children who determine the final level.

The model is only "skeletal"; it cannot accommodate in the one illustration any detailed information about the curriculum. And so other models elaborate it. One of these is a chart in which the first two environmental levels—"self" and "home & family"—are related to phases of development stemming from the physical, social, and psychological aspects of the curriculum. This chart is reproduced following the "expanding environment" model.

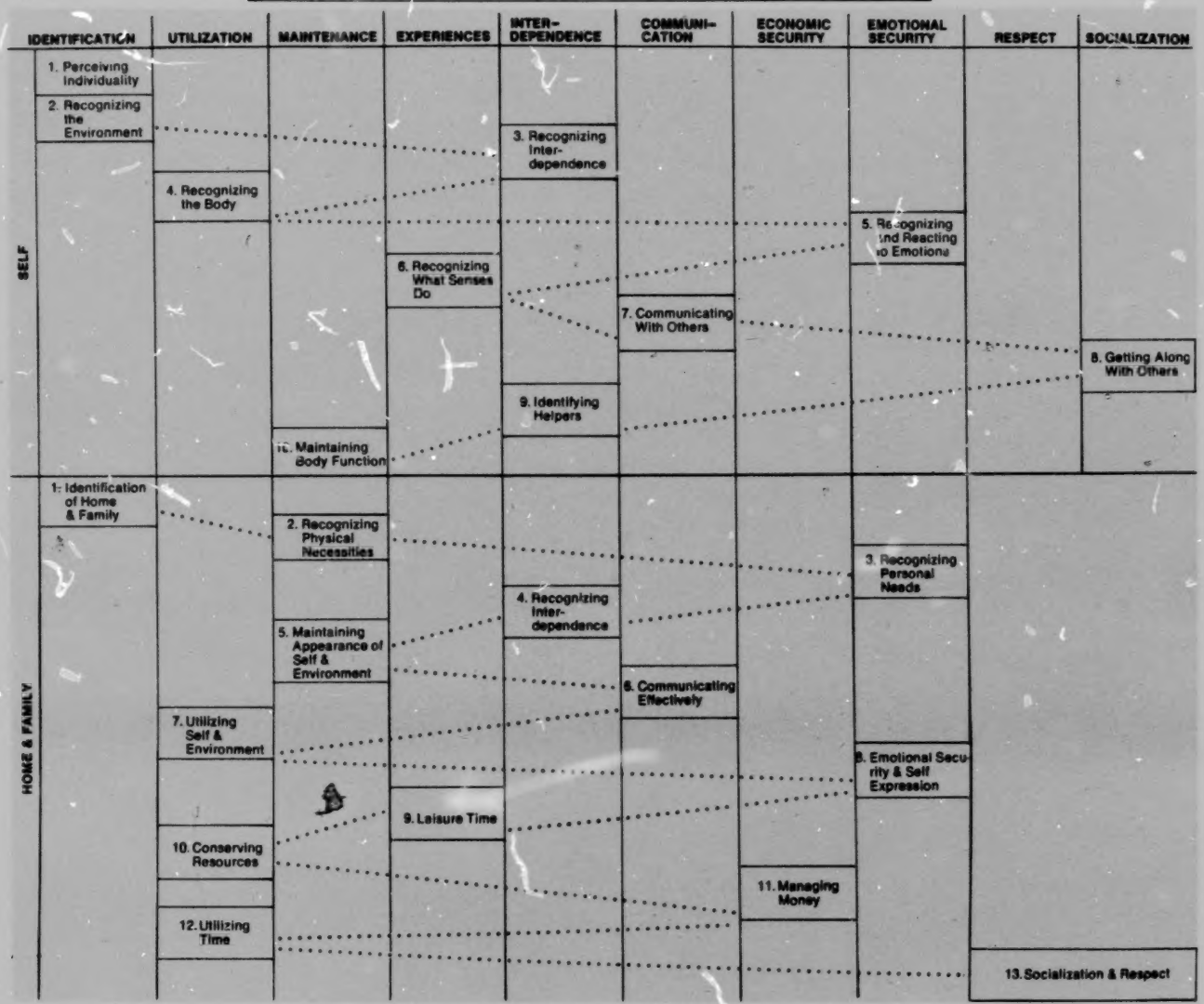
MODEL OF CHILD'S EXPANDING ENVIRONMENT & ENVIRONMENT COMPONENTS



Among still further models for the SOCIAL LEARNING CURRICULUM is this verbal model for learning strategy:

> To guide us in building the curriculum, we have organized the content in accordance with a well-established view of how learning takes place. This view holds that the first impression one has of any situation is global. One senses people, things, noises, colors and many other facts that seem to be part of the setting, but the totality of what is involved in the situation remains a mystery. This is called the *Mass Stage*.

SOCIAL LEARNING CURRICULUM—"SELF" AND "HOME & FAMILY"



Copyright © 1969 by the Curriculum Research and Development Center in Mental Retardation, Yeshiva University, New York

When a child begins to make sense out of the situation by making distinct identifications of the many characteristics of it, he is *Differentiating*. That is, he finds out who people are, what they do, what things are and how they are used, etc. By actively and purposefully studying the separate and relevant parts of the situation, he begins to understand the whole.

When the learner is able to understand the parts he has differentiated, they will become integrated into his knowledge bank and he can learn to act upon them, manage them, see the relationships between them, and make use of them almost automatically. This we call the *Integration Stage*.

For example, suppose someone wants to learn to drive a car. Driving represents what is to be learned, but is a vague, undifferentiated concept. The Mass behavior (driving) has several components—or differentiations, such as steering, braking, shifting, and accelerating. Each of these can be learned as a separate skill and concept at the Differentiating stage. When the person can get into a car, put it in gear, release the brake, step on the accelerator and steer it into the street almost without thinking, he will have reached the Integration stage. He is not just performing a number of separate skills; they are integrated into a Mass behavior called driving.

Models for Project I CAN

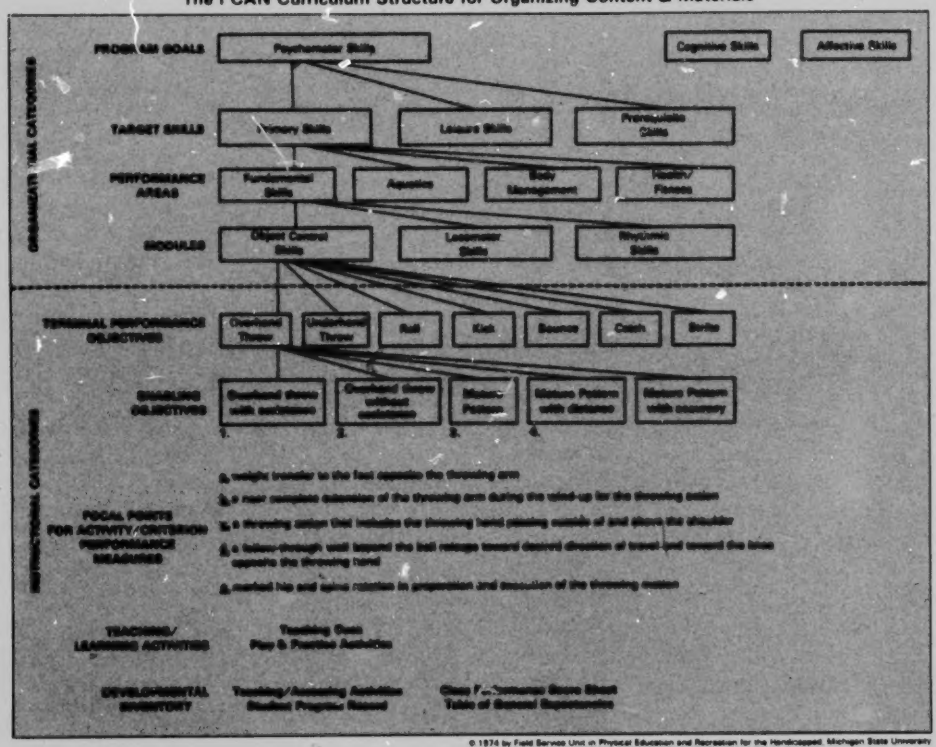
Another of the authors' projects, I CAN*, has divided its program goals into

psychomotor skills
cognitive skills
affective skills

and employs different models for each of the three. For the last—affective skills—the "expanding environment" model already illustrated is used for sequencing content.

Psychomotor skills are a basic emphasis in physical education, and the I CAN model for these skills shows organization of content and structure of the curriculum. The model is a chart (reproduced below), and on it, what the children do each day is related all the way back to the curriculum's overall goals.

The I CAN Curriculum Structure for Organizing Content & Materials



Only one of many daily physical activities—throwing a ball overhand—could be fitted into the model, but it is a replacement element that is understood to stand for all the other physical activities as well (throwing a ball underhand, striking at a ball, catching a ball, running, hopping, skipping, kicking, and so on, until the total of all such activities is reached).

A cybernetic, verbal model of learning was adopted by I CAN:

1. Children process information one bit at a time; that is, they attend to only one stimulus at a time and cannot focus on two simultaneously. They learn to do two things at once when one has been overlearned and can be relegated to lower levels of the central nervous system.
2. Motor skills learning occurs in three stages:
   a. plan formation (for example, see a through e of "Focal Points for Activity/Criterion Performance Measures" in the structural model for psychomotor skills).
   b. practice
   c. automaticity

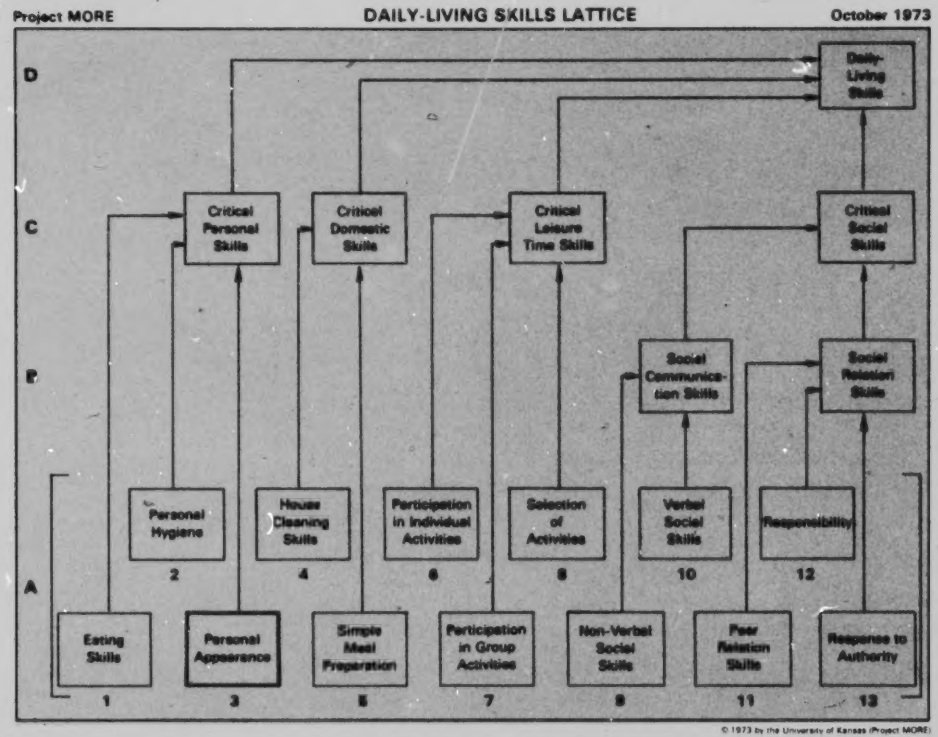
*I CAN, a physical education curriculum for the trainable mentally retarded, developed through the Programmatic Research Project in Physical Education for Mentally Retarded Children and Youth, Michigan State University. For a thumbnail sketch of the project, see page 86.

This learning model is assessed by constant feedback. If its assumptions are correct or are closely related to some other, unknown model which is correct, then the children will learn to throw a ball overhand by learning steps a through e on the structural model one at a time. If the model is incorrect and the components of the pattern cannot be separated in this way (a through e again), then instructional strategies based on it will not work.

Other models for other dimensions of the program are also used by I CAN, until cognitive behaviors (analyzing, evaluating, conceptualizing, etc.) and affective behaviors (learning fair play, sharing, etc.) are covered too. But it is not a purpose of the examples to lead through one project's curriculum design completely. Another approach to the problem of design will be introduced instead.

Models for Project MORE

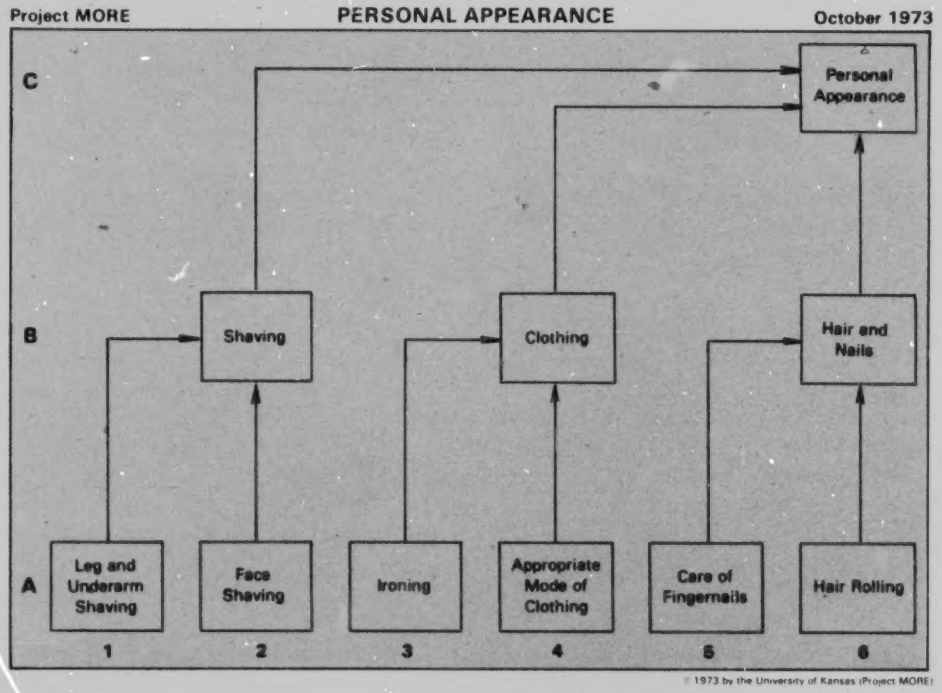
A model employed by Project MORE*, another of the author's projects, at first appears deceptively simple—until its origin in planning is known. The target population of students (the trainable retarded both in and out of institutions) may be instructed by parents, attendants, and others—and the daily living (normalization) skills that are the subject of the curriculum are very basic skills such as shaving, washing the hands, washing and combing the hair, using eating utensils, and so on. Hence the project's model is easy to follow, as shown by the chart, or lattice, reproduced below.



This daily living skills lattice shows interrelationships among specific objectives, and their individual and collective relation to broader objectives or goals. Thirteen individual sets of skills are listed and numbered at the bottom of the lattice. Three of these sets (Numbers **1**, **2**, and **3**) have been programmed for

*Project MORE, a curriculum project in daily living skills for the trainable mentally retarded, developed at the University of Kansas Bureau of Child Research, Parsons State Hospital and Training Center, Parsons, Kansas. Other curricula in critical social skills and related areas are also under development by the project. For a thumbnail sketch of the total project effort, see page 88.

instruction in the project's operations to date. Number 3, "Personal Appearance," is indicated by heavy outlining in the master lattice as an example that can be followed to an individual lattice of its sets of skills, as shown below. The photograph then illustrates the beginning sequence in one of the skills (face shaving) of the set. A student is shown with his instructor as he learns to lather before using a razor.



What is not apparent in the models and the photograph is the careful analysis underlying the total program's simplicity, namely

1. videotapes of normal persons going about their daily living skills
2. videotapes of retarded subjects going about these skills or attempting to do so
3. comparison and content task analysis of the videotapes

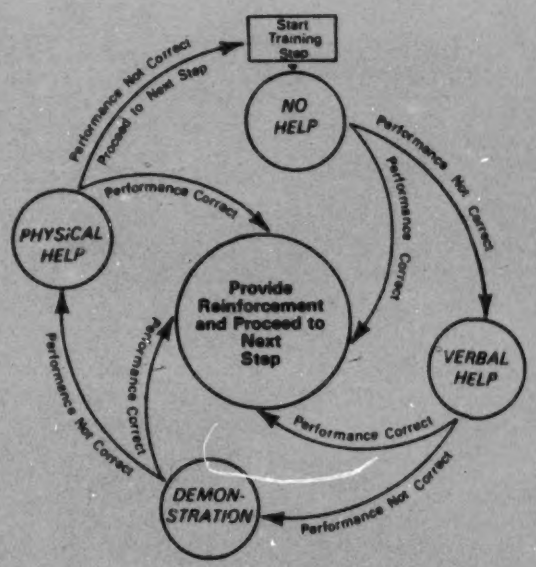
4. identification of skills for the instructional program
5. process or "stepwise" task analysis of the videotapes for these skills
6. selection of a teaching strategy
7. preparation of sample skills lessons, followed by pilot testing of the lessons, with observational feedback (instructor's report) and videotape feedback to the project staff

In consideration of all the skills and of the diverse backgrounds of the instructors (parents, attendants, teachers, etc.), the model selected for the teaching strategy by Project MORE is a simple, four-step model:

1. *No help.* The student is given the opportunity to perform a step independently.
2. *Verbal help.* If the step is not accomplished the student is told what to do.
3. *Demonstration.* If instructions are not followed correctly the instructor demonstrates the step.
4. *Physical help.* If the student still does not perform the step correctly the instructor guides the student's hands through the correct response (see photograph).

The project's own summary of the teaching strategy is reprinted below.

The overall goals of Project MORE are to make trainable retarded adolescents more acceptable—and therefore more accepted—in their daily living patterns and community life.



© 1974 by the University of Kansas (Project MORE)

THE TEACHING STRATEGY

Four levels of assistance are used by the trainer in **Project MORE** programs. It is essential for you to proceed systematically through all levels of assistance if your student does not perform a step correctly. These levels of assistance are thoroughly presented in **How To Do More**, but here is a quick review.

No Help—first provide your student with the opportunity to perform the step without assistance. If your student does not perform a step correctly after approximately five seconds at the *No Help* level, give the next level of assistance, *Verbal Help*.

Verbal Help—give your student a reminder for the step. (It is written above the definition of the behavior for every step.) If your student performs the step correctly, go to the next step and wait for your student to perform the step with *No Help*. If, after *Verbal Help*, your student does not perform the step correctly or fails to perform the step after a 10-second wait, move to the next level of assistance, *Demonstration*.

Demonstration—show your student how to perform the step as you tell him/her what you're doing. If the student performs the step correctly, go to the next step and again provide *No Help*. If, after the *Demonstration*, the student does not perform the step correctly or fails to perform the step after a 10-second wait, give the next level of assistance, *Physical Help*.

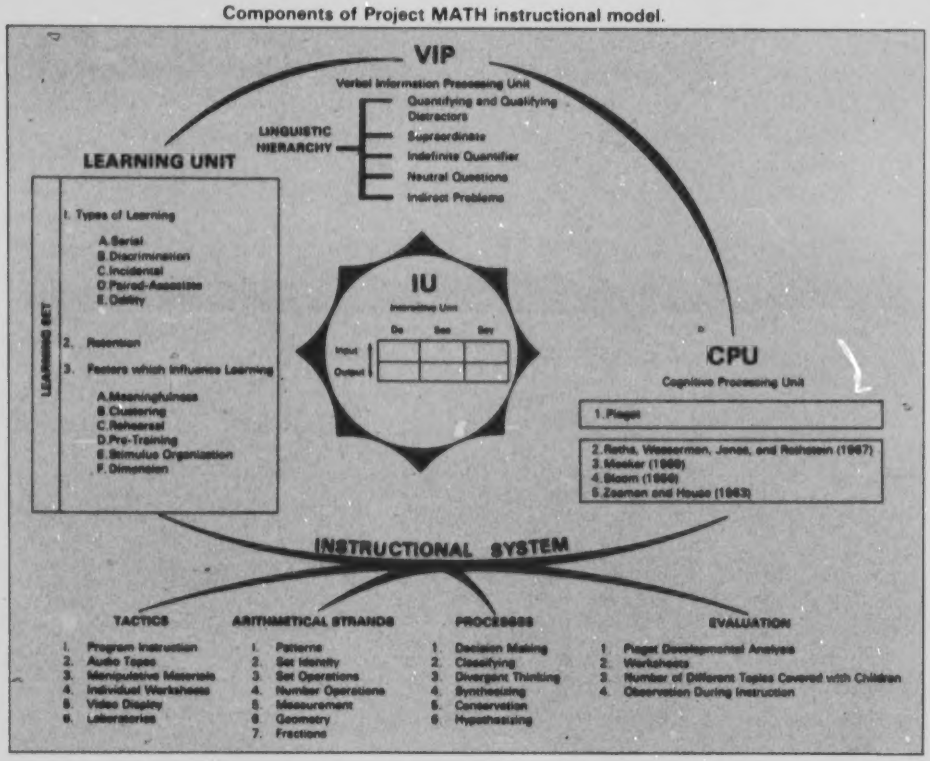
Physical Help—as you tell your student how to perform the step, physically assist the student by guiding his/her hands. If your student performs the step correctly, go to the next step and again provide *No Help*. If the student is unable to perform the step correctly after being given *Physical Help*, do not give the student another opportunity to perform the step again until your next training session. Instead proceed with the training program by giving the student the opportunity to perform the next step with *No Help*.

An objective of all **Project MORE** programs is to fade the trainer's assistance until the student is able to perform all the steps independently. When the student is able to do all of the steps with *No Help*, the cue for performing each step will be the preceding step.

The "Overall" Model for Project MATH

The variety of verbal and graphic models illustrated for three projects makes it apparent that one model for all dimensions of design is difficult to conceive. The model originally selected by Project MATH*, however, was an attempt to summarize as many dimensions of the curriculum as possible. Instead of focusing on one dimension of a total curriculum, project MATH focuses on the total picture of one content area, mathematics. A diagram of the model is shown below as it appeared before a revision. [The interactive unit has been expanded and the number of strands has been reduced to six.] The diagrammatic scheme shows various dimensions of the model.

Components of Project MATH instructional model.



The bottom third of the diagram shows the "Instructional System" as an integration of different aspects of learning and teaching mathematics. While listed separately, "tactics," "arithmetical strands," "processes," and "evaluation" are all integral parts of the teaching-learning process.

Following the indicated black line up and to the right leads to "CPU," the cognitive processing unit related to the "processes" already listed below under the "Instructional System." Various authorities on learning and on the cognitive processes are listed under "CPU." (For the other curriculum projects noted on preceding pages, these and other authorities are listed in the narrative or explanation for curriculum design). The model's list is broken, however, after Piaget, before it resumes. The top part with Piaget's name signifies that some behaviors in cognitive processing develop naturally, without intervention; they are not even measurably influenced by intervention but only by the student's own maturational development rate and his normal background of experiences. The second part of the list names some of the authorities on other cognitive behaviors that may be influenced by instruction, intervention, or experimentation.

*Project MATH, a mathematics curriculum for the educable mentally retarded, developed at the University of Connecticut. For a thumbnail sketch of this project, see pages 86-87.

Following the heavy black line upward again leads next to "VIP," the verbal information processing unit. "Verbal" rather than "numerical" in the name fits the emphasis already given to cognitive processes (over computation). The "linguistic hierarchy" below the unit's name lists situations in which

a) extraneous information (distractors) will occur along with needed information
b) ranking and classifying items into sets and subsets (fulfilling the supraordinate requirement) will be necessary to solve some problems. ("The boy has 5 cats. The girl has 3 dogs. How many animals do they have in all?")
c) nonspecific words like "many," "few," and "some" (indefinite quantifiers) will be used to avoid triggering rote computations when analysis of the problem is the requirement
d) neutral questions will give as few clues as possible to the operations required to solve certain problems
e) some problems will be stated indirectly or in ways other than those the students are most accustomed to

Following the model's heavy black line a last time, to the left, leads to the "Learning Unit" or "Learning Set," which essentially is a learning-to-learn component. It emphasizes that the developers must give attention to such recognized types or factors of learning as the ones listed.

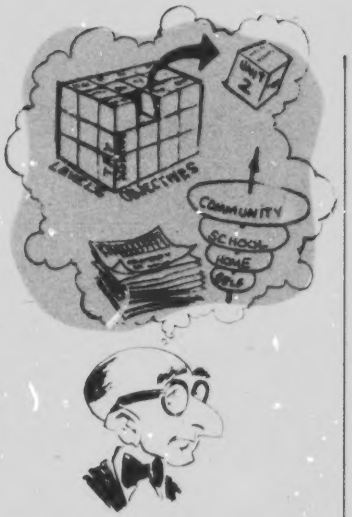
The central element of the model remains—the "Interactive Unit." Its input and output refer both to the teacher and to the student and are marked with an arrow that points reciprocally. The conclusion is that *everyone* will learn—the teacher, too (confirming a diagnostic function in the curriculum); learning rather than passing or failing grades will be the focus. The "Do," "See," and "Say" labels are informal expressions for a) manipulating things, b) watching some visual representation of them, and c) talking them over without demonstration or pictures.

There remain two major items not explicit in the model. As envisioned by its developers, the curriculum is a multiple option curriculum. As such, it provides for the teacher a number of choices of content for programming any individual learner. Closely related to this characteristic of multiple option is the curriculum's *diagnostic-prescriptive* nature. Each child's levels of cognitive processing can be diagnosed, and a program determined to help that child in areas of weakness.

Criteria in Selecting a Model

For another of the authors' projects, ME AND MY ENVIRONMENT*, a verbal model has been used for the design. Its environmental themes, inquiry skills, problem-solving skills, and subject matter have carried over to a *matrix model* for the development of teaching and learning materials. Matrix analysis has continued to influence the program in field tests and revision, so that the model is now a *matrix-analysis design and developmental* model that will be illustrated in part in the next chapter.

*ME AND MY ENVIRONMENT, a life sciences curriculum for educable mentally retarded children aged 13 to 16. This curriculum, and its precursor ME NOW, have been developed by the Biological Sciences Curriculum Study in Boulder, Colorado. For a thumbnail sketch of the project, see pages 87-88.



The models illustrated in the preceding pages provide a background for considering important criteria in model selection:

1. A model should be easily reproducible (see page 11) and placed in sequence with the narrative on curriculum design.
2. The choice of a model's dimensions (see page 11), while left up to the developer, should reflect process, objectives, and rationale for the curriculum. (Example: the "expanding environment" model in relation to systematically greater objectives.)
3. Any one or more of the dimensions may be either restricted or left open. (Examples: the "Interactive Unit" of Project MATH's model, page 18, is open; the community level of the "expanding environment" model is restricted or open depending on whether further expansions are noted or suggested.)
4. If the dimensions are not restricted, entry and exit points of the curriculum, for its beginning and ending activity along these dimensions (levels of development or environmental awareness, levels of cognitive behavior, subject matter, etc.), should be indicated on the model if possible.
5. As implied by Number **4**, a model may be selected that is equal to or greater than the curriculum in its dimensions.
6. Models that are well documented by research and experience may be borrowed as a curriculum's design model.
7. Models may also be borrowed subject to modification, if documentation or justification for the modifications is made.
8. Any model selected should provide some concrete basis for comparing similar curricula and contrasting dissimilar ones.
9. Any new model is subject to a research requirement and documentation.

The Narrative for Curriculum Design

Most of the space in this chapter has been given to design models, but most of the space in the curriculum plan's own section on design will be given to the narrative that accompanies the models.

The narrative should present the conceptual framework in full:

1. research and theoretical bases for the curriculum design, including appropriate references and bibliography
2. the subject matter (with entry and exit points) and other elements of the content (skills and cognitive processing, themes and concepts, etc.)
3. anticipated learner outcomes—how and why the specific behavioral objectives are what they are
4. the nature of the product (teacher and learner materials in different media)
5. the teaching and learning strategies that are to be employed (strategies that may range from *active* [requiring new classroom tactics and transactions] to *reactive* [departing relatively little from prevailing classroom practices])
6. the teacher's role in determining the curriculum's content
7. the teacher's role in determining the rate and style of presentation
8. the learner's role in determining the curriculum's content and its rate and style of presentation

9. in conjunction with Numbers **6-8** (especially for mentally retarded children), a diagnostic-prescriptive system to enable the teacher to make decisions that may affect entry points, exit points, recycling needs, by-passes, and individualized instruction
10. how teachers or implementers will be trained, if training will be necessary
11. planned pilot-teaching or field tests
12. suggestions for curriculum evaluation

Each of these points has cyclic implications that last throughout the development and implementation stages. As an example, Points **6, 7, 8,** and **9** will give teachers and students some freedom in affecting the curriculum and in putting diagnostic procedures (Point **9**) to the right use. Yet providing this freedom of choice—however important—affects basic considerations in later evaluating the curriculum. The evaluation activities will need to be planned to assess:

- whether teachers exercise their freedom
- in what ways they exercise it
- whether objectives are met regardless of the options followed
- which of the options bring extra benefit
- which have little effect or negative aspects

The implications are not the same for different projects, small- and large-scale. A smaller project will work more easily with options because its pilot-teaching may be restricted to one or a few classes. A larger project will plan all subsequent steps following curriculum design much differently than it otherwise would.

Bibliography

Collins, H. A., G. K. Burger, and **D. Doherty.** Self-concept of EMR and Non-retarded Adolescents. *American Journal of Mental Deficiency* **75**, 1970, pp. 185-89.

Conley, R. W. *The Economics of Mental Retardation.* The Johns Hopkins University Press, 1973.

Fuchigami, R. Emerging Curricula for the Elementary Level EMR. *Mental Retardation* **3**, 1969, pp. 37-40.

Gardner, W. I. *Behavior Modification in Mental Retardation.* Aldine-Atherton Company, Chicago, 1971.

Goldstein, H. Construction of a Social Learning Curriculum. *Focus on Exceptional Children* **1**, 1969, pp. 1-10. (Also in Meyen, E. L. *et al*, 1972, which see.)

Goodman, H., J. Gottlieb, and **H. Harrigan.** Social Acceptance of EMRs Integrated into a Nongraded Elementary School. *American Journal of Mental Deficiency* **76**, 1972, pp. 412-17.

Grobman, H. *Developmental Curriculum Projects.* F. E. Peacock Publishers, Itasca, Illinois, 1970.

Hammons, G. W. Educating the Mildly Retarded: A Review. *Exceptional Children* **38**, 1972, pp. 565-70.

Meisgeier, W. E., and **G. S. Mischio.** Curriculum Design for the Educable Mentally Retarded. *Focus on Exceptional Children* **3**, pp. 1-10. (Also in Meyen, E. L. *et al*, 1972, which see.)

Hewett, F. M. The Engineered Classroom: an Innovative Approach to the Education of Children with Learning Problems. *Innovation in Special Education*. U. S. Department of Health, Education and Welfare. U. S. Government Printing Office, Washington, D. C., 1972.

Johnson, M. Definitions and Models in Curriculum Theory. *Educational Theory* **17**, 1967, pp. 127-140.

Joint Commission on Accreditation of Hospitals, Accreditation Council for Facilities for the Mentally Retarded. *Standards for Residential Facilities for the Mentally Retarded*. Joint Commission on Accreditation of Hospitals, Chicago, 1973.

Keans, V. E. The Incidence of Speech and Language Problems in the Mentally Retarded. *Mental Retardation* **10**(2), 1972, pp. 3-8.

Kolstoe, O. P. *Mental Retardation: An Educational Viewpoint*. Holt, Rinehart and Winston, New York, 1972.

Kral, P. Motor Characteristics and Development of Retarded Children. *Education and Training of the Mentally Retarded* **7**(1), 1972, pp. 14-21.

Lent, J. R. Mimosa Cottage: Experiment in Hope. *Psychology Today* **2**, 1968, pp. 51-58.

Lent, J. R. and **B. M. McLean.** The Trainable Retarded: the Technology of Teaching. In Haring, N. G. and R. L. Schiefelbusch (Eds.), *Teaching Special Children*, McGraw-Hill Book Company, New York, in press.

MacMillan, D. L. Special Education for the Mildly Retarded: Servant or Savant. Focus on *Exceptional Children* **2**(9), 1971, pp. 1-11.

McLean, J., D. E. Yoder, and **R. Schiefelbusch** (Eds.). *Language Intervention with the Retarded: Developing Strategies*. University Park Press, Baltimore, Maryland, 1972.

Meyen, E. L., G. A. Vergason, and **R. J. Whelan** (Eds.). *Strategies for Teaching Exceptional Children*. Love Publishing Company, Denver, Colo., 1972.

Molloy, J. S. *Trainable Children: Curriculum and Procedures*, Revised Edition. John Day Company, New York, 1972.

Oelberg, S. *Social Learning Curriculum for Junior and Senior High School EMRs*. Curriculum Research and Development Center in Mental Retardation, Yeshiva University, New York, 1973.

Rarick, G. L., J. H. Widdop, and **C. D. Broadhead.** The Physical Fitness and Motor Performance of Educable Mentally Retarded Children. *Exceptional Children* **36**(7), 1970, pp. 509-19.

Ross, R. T. Behavioral Correlates of Levels of Intelligence. *American Journal of Mental Deficiency* **76**, 1972, pp. 545-49.

Saylor, J. G. and **W. M. Alexander.** *Planning Curriculum for Schools*. Holt, Rinehart and Winston, New York, 1974, pp. 189-244.

Schurr, K. T. and **W. B. Brookover.** *The Effect of Special Class Placement on the Self-concept of Ability of the Educable Mentally Retarded Child*. Michigan State University, East Lansing, Michigan, 1967.

Stratemeyer, F. B., H. L. Forkner, M. G. McKim, *et al. Developing a Curriculum for Modern Living*, Second Edition, Teachers College Press, Columbia University, New York, 1957.

Thompson, T. and **J. Grabowski.** *Behavior Modification of the Mentally Retarded*. Oxford University Press, New York, 1972.

CHAPTER **THREE**

Staff Selection, Product-Planning, And Field Test Arrangements

Facilities and Staff

The first step in making a curriculum development plan operational involves staff appointments. All of the following considerations are raised:

1. the availability of people of the required talents and training
2. their willingness to relocate, if necessary, where the project will have its headquarters
3. their willingness to consider employment that may be temporary (unless the project is a small one confined to the existing staff of a school district)
4. identification of someone (presumably to be a staff member) who can train others on the staff in their specific duties
5. for larger projects, identification of a staff member who will be an administrator
6. the scheduled arrival of staff members to provide each when needed, not necessarily all simultaneously
7. identification of free-lance personnel to fill certain roles for which full-time staff members may not be needed
8. selection of an Advisory Committee of specialists in the area of the curriculum, and in the problems and needs of the target population (an Advisory Committee may be asked to meet only once or twice a year)
9. arrangement of physical facilities for the staff—offices, office equipment, materials, and supplies
10. arrangement of additional space for conferences, for teacher training, etc.; and arrangements for equipment for all required media uses

A small project may have only one or two staff members, within a single school district; many of the preceding considerations will not apply. The need for production specialists—artists, photographers, motion picture photographers, editing and printing consultants, etc.—can be filled when necessary on a free-lance basis.

A large project will have all the listed problems and more (see also Chapters 7 and 8, Finance and Management); a careful listing of positions and duties will be mandatory. Deliberations of free-lance vs. full-time project staff positions will involve not only time and workload projections but questions of control and efficiency—of the project doing everything itself instead of subcontracting parts at the risk of loss of control, delay, and so on. If much writing is to be done, a full-time writer-editor should be considered as a possible staff member; if much work in other media is contemplated, artists, photographers, audio-visual specialists, and others should be considered. An entire mediation department may be planned, to prepare all materials in consultation and cooperation with the developers. The listing of staff positions should include a business manager, secretaries, receptionist-telephone operator, clerks, mail room personnel, and even a janitor.

Specification of the Curriculum's Product

The product itself should be specified clearly before the staff assignments and scheduling proceed to final form. The necessary steps depend partly on the detail of earlier descriptions of the curriculum:

1. Objectives (Chapters 1 and 2) must be broken down into their "smallest-step" behaviors, if this has not already been done. A *behavioral* (or process) *task analysis* can be made of each terminal objective, until each individual learning behavior has been identified and recorded as*
   - **a.** *Conditions.* Given:_____
     Such as: ___(example)_____
     Aids or restrictions:_____
   - **b.** *Behavior.* The student will:_____
     _____
   - **c.** *Standards.* (Use one or more of the following.)
     Time limit:_____ Speed:_____ Accuracy:_____
     According to:_____
     So well that:_____
     In a manner characterized by:_____
2. Content should be analyzed along with the objectives as they are identified in "smallest steps."
   - **a.** Subject matter should be analyzed, sequenced, and grouped.
   - **b.** Themes should be cycled through the subject matter.
   - **c.** Skills should be programmed for development and application.
   - **d.** Any other elements of the content should be similarly programmed.

   A separate *content task analysis* can be made and checked against the *behavioral task* analysis.

   If behavioral objectives have been categorized as

psychomotor		physical
cognitive, and	or	social, and
affective		psychological

   or similarly, then the curriculum's content can be categorized the same way.

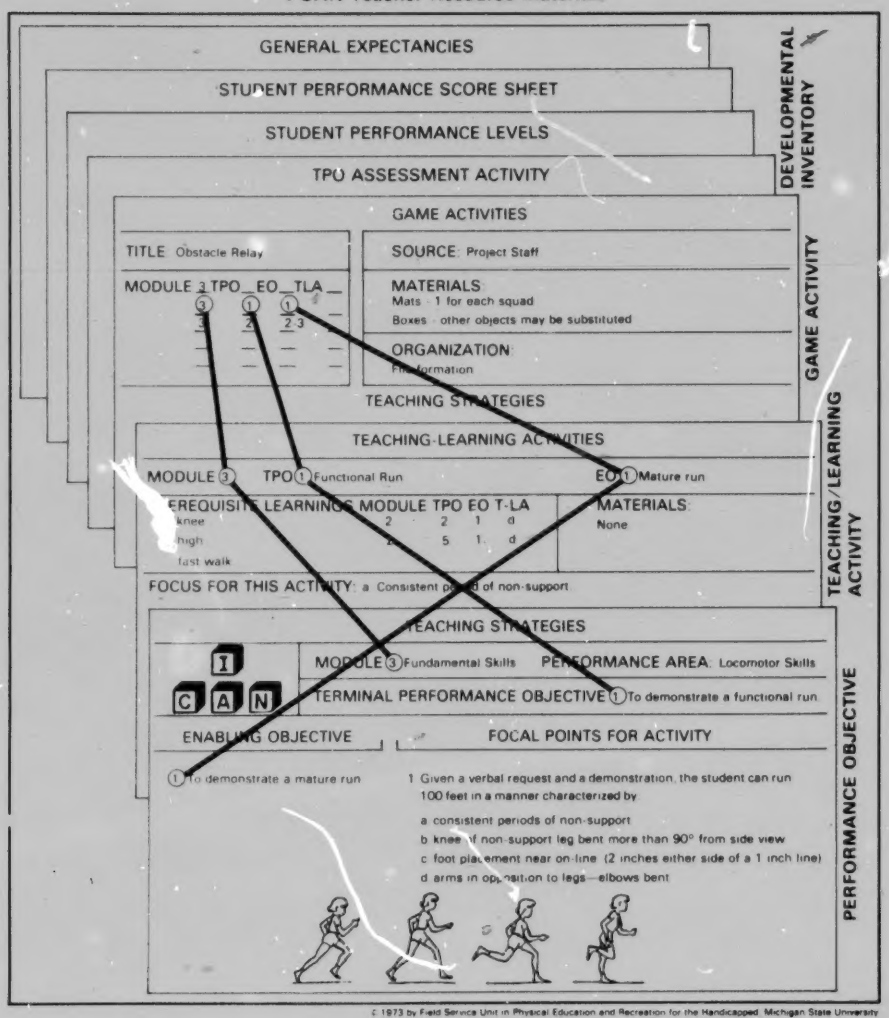
*Outline form for behavioral objectives, Project I CAN (pages 14 and 86), after Davis *et al.* (1972).

3. Format and media decisions should be made for all parts of the students' materials.

   a. Content characteristics (or requirements), available choices of media, and learning characteristics of the target population should be assessed together, and tentative recommendations of media plotted throughout the curriculum.
   b. The media recommendations should be reviewed and organized as a learning program format.
   c. The efficiency of the format for the teacher should be reviewed.
   d. The cost of the product in this format should be reviewed.
   e. The relationship of media specialists to content specialists and writers, in producing materials for the different media, should be established.
   f. Techniques for producing, reviewing, and revising materials in the different media should be developed.

4. Other appropriate content, format, and media decisions should be made for teacher's materials and for teacher-training materials (an illustration of planning for use of teacher resource materials follows, for Project I CAN).

I CAN Teacher Resource Materials


GENERAL EXPECTANCIES
STUDENT PERFORMANCE SCORE SHEET
STUDENT PERFORMANCE LEVELS
TPO ASSESSMENT ACTIVITY
DEVELOPMENTAL INVENTORY
GAME ACTIVITIES
TITLE Obstacle Relay
SOURCE Project Staff
MODULE 3 TPO 1 EO 1 TLA
MATERIALS
Mats - 1 for each squad
Boxes - other objects may be substituted
ORGANIZATION
GAME ACTIVITY
TEACHING STRATEGIES
TEACHING-LEARNING ACTIVITIES
MODULE 3 TPO 1 Functional Run
EO 1 Mature run
MATERIALS
None
FOCUS FOR THIS ACTIVITY: a Consistent period of non-support
TEACHING/LEARNING ACTIVITY
TEACHING STRATEGIES
MODULE 3 Fundamental Skills
PERFORMANCE AREA: Locomotor Skills
TERMINAL PERFORMANCE OBJECTIVE 1 To demonstrate a functional run
ENABLING OBJECTIVE
FOCAL POINTS FOR ACTIVITY
1 To demonstrate a mature run
1 Given a verbal request and a demonstration, the student can run 100 feet in a manner characterized by
a consistent periods of non-support
b knee of non-support leg bent more than 90° from side view
c foot placement near on-line (2 inches either side of a 1 inch line)
d arms in opposition to legs—elbows bent
PERFORMANCE OBJECTIVE

© 1973 by Field Service Unit in Physical Education and Recreation for the Handicapped, Michigan State University

*For related information concerning the structure of I CAN, see *Schematic of I CAN Structure* (page 14).

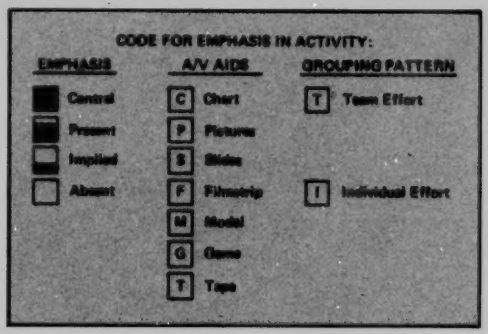
5. Systematic methods should be applied equally to each of the foregoing decisions, for efficiency in

   a. planning and correlation
   b. record-keeping
   c. continuing inspection and reassessment
   d. development and scheduling
   e. evaluation and revision procedures or guidelines

   One of several systematic methods that may prove valuable is matrix analysis, used for steps **a, b, c,** and **d** (development in **d**) by the BSCS project ME AND MY ENVIRONMENT (pages 19 and 87). Matrix analysis is a process of determining and recording

   - events in some relationship to one another
   - frequency and degree of emphasis on curricular skills or other components

   The coded display of this information on charts or tables makes continuing inspection of the curriculum possible. Five of the ME AND MY ENVIRONMENT matrices are illustrated on this and the next page, where, for each matrix, the numbers **1, 2, 3,** ..., across the top represent the numbered sequence of lessons or activities in *one* unit of instruction. The key for symbols used on the matrices follows:



It is useful to take a moment to examine the sample matrices and confirm how much information from the curriculum they can "store"—skills, content, the sequencing or cycling of both, individual and group activities, media decisions and format, and, hence, in many ways, the product's definition when matrices for *all* units (not just the one unit illustrated) are completed and examined together.

TABLE 1 MATRIX OF EMPHASIS ON ENVIRONMENTAL THEMES

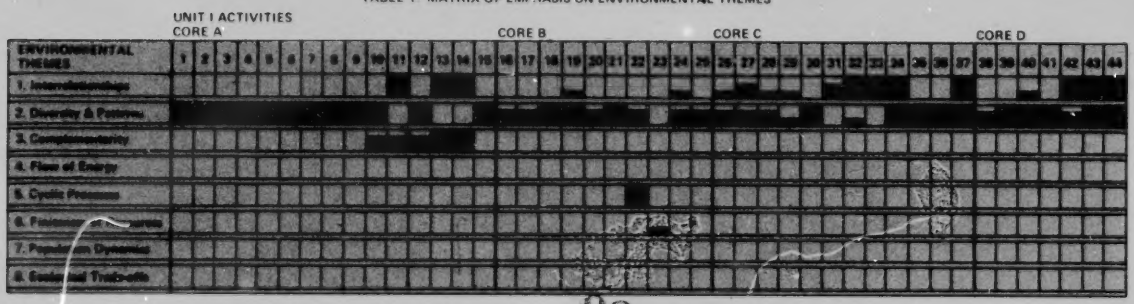

UNIT I ACTIVITIES
CORE A
CORE B
CORE C
CORE D
ENVIRONMENTAL THEMES
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44
1. Interrelationships
2. Diversity & Patterns
3. Complementarity
4. Flow of Energy
5. Cyclic Processes
6. Fluctuating Measures
7. Population Dynamics
8. Ecological Tradeoffs

TABLE 2. MATRIX OF EMPHASIS ON INQUIRY SKILLS

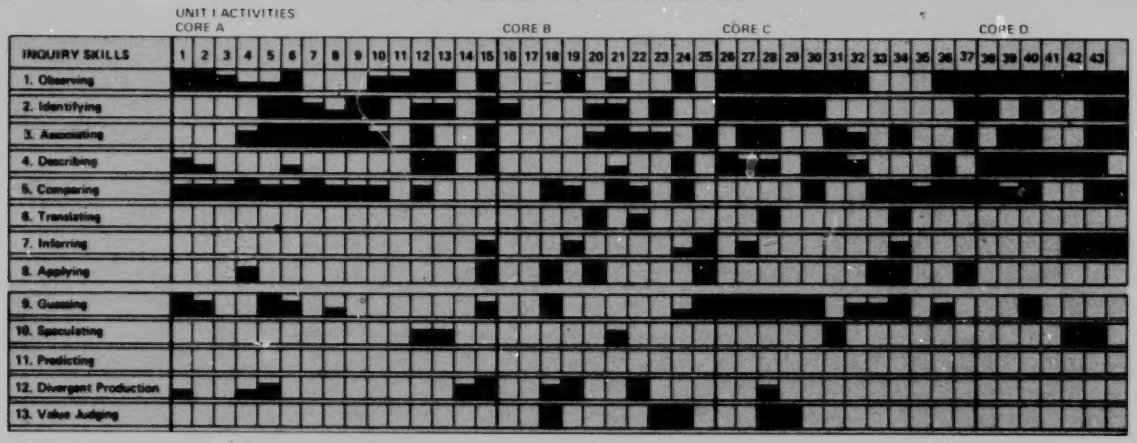


TABLE 3. MATRIX OF EMPHASIS ON OTHER DEVELOPMENTAL ABILITIES

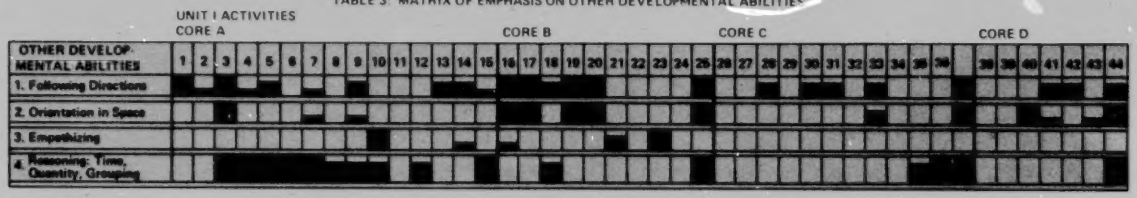


TABLE 4. MATRIX OF EMPHASIS ON PROBLEM-SOLVING SKILLS

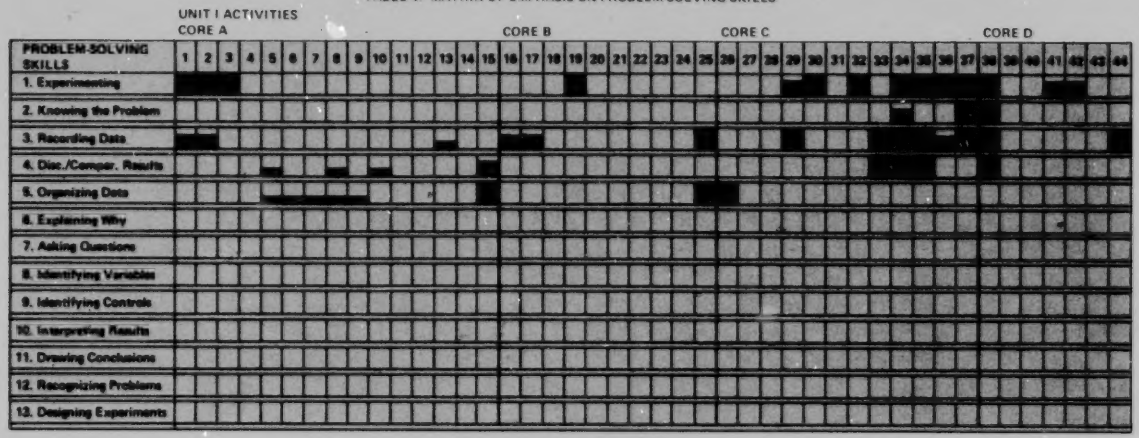
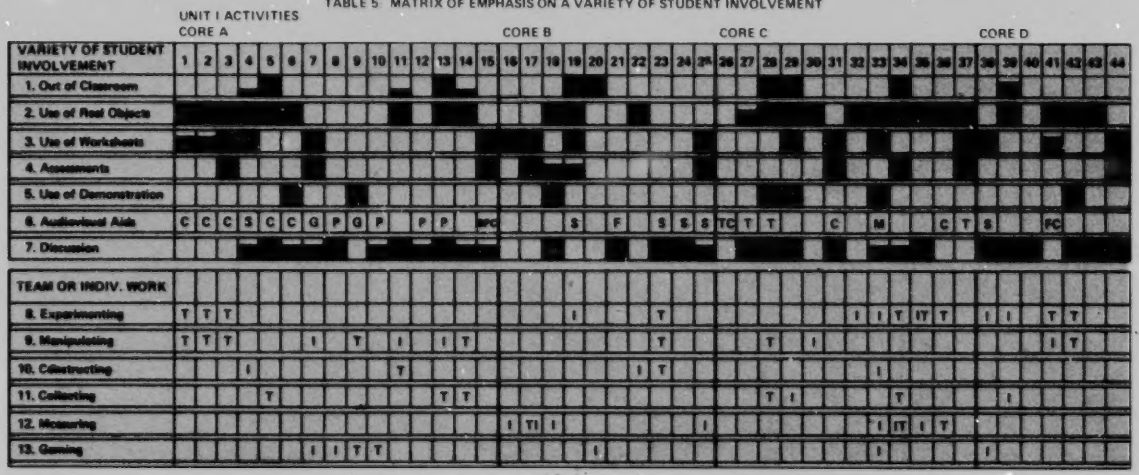


TABLE 5. MATRIX OF EMPHASIS ON A VARIETY OF STUDENT INVOLVEMENT



Different projects may follow or modify the foregoing product-planning steps in various ways. Project MATH (see pages 18 and 86), for example, does not specify in advance all the detailed instructional objectives (Point **1**). Rather, it defines instructional areas and concepts (Point **2**), establishes the pattern of teacher-learner interactions (and the steps necessary to constitute a teaching and learning sequence), then leaves some freedom to the writers to develop a variety of activities for each content area. In other words it does not *prescribe*, but rather *circumscribes*, the writers' tasks. As a consequence, evaluative criteria and statements of specific objectives are established after review and acceptance (or revision) of a sequence of instructional activities.

No close agreement exists among experienced curriculum developers about the best of these two generally contrasted approaches—*prescribing* the writers' tasks or *circumscribing* them. But in the absence of both, agreement is quick: much of the writing effort will be lost owing to misunderstandings and indirection. Detailed planning and clear communication and follow-up are necessary to successful product development.

Scheduling

The curriculum's product is the most visible, perhaps even the most central, element in scheduling, but many other considerations beyond the development of the product itself affect staff scheduling. Some of these are:

1. staff training (Chapter 4)
2. teacher training (Chapter 4)
3. evaluation (Chapter 5)
4. dissemination and implementation (Chapter 6)
5. time, money, management, etc. (Chapters 7 and 8)

Scheduling ordinarily begins with staff training, planning, and product development, and of these three factors the two most often underestimated—or occasionally not anticipated and included at all—are *training and planning time*. Many experienced developers add an allowance for them as a definite percentage of the overall time given to product development, teacher training, evaluation, and each other phase of the project staff's work.

The physical description of the schedule may be visualized in any number of ways:

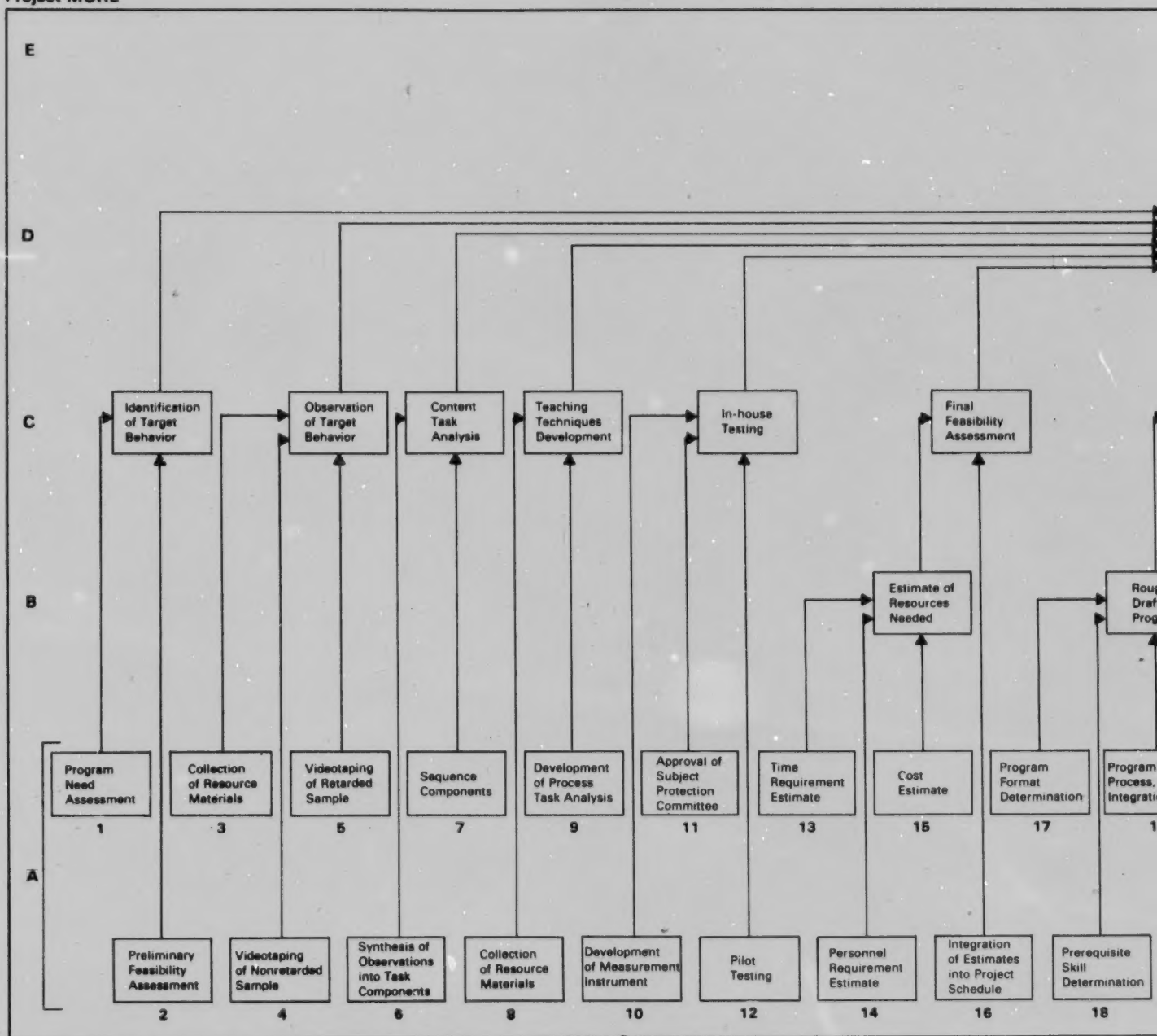
1. a list of names and jobs, with projected dates of completion
2. a sequencing of the events or jobs on a flow chart, with staff names and dates added
3. a task analysis, with individual loading charts for staff members
4. PERT charts (Cook, 1966; Handy and Hussain, 1969; Moder and Phillips, 1970)

There are also other ways. Making a choice of a "best" one involves the requirements of the particular curricular undertaking, the size of the staff, the resulting complexity of the overall project, and the regulations of a school district or university or funding agency that may support the project's work.

Careful *event sequencing*—or the analysis of the flow of all the developmental work—is important to all projects. Event sequencing, however, may or may not incorporate staff assignments and scheduling—these are further steps that depend

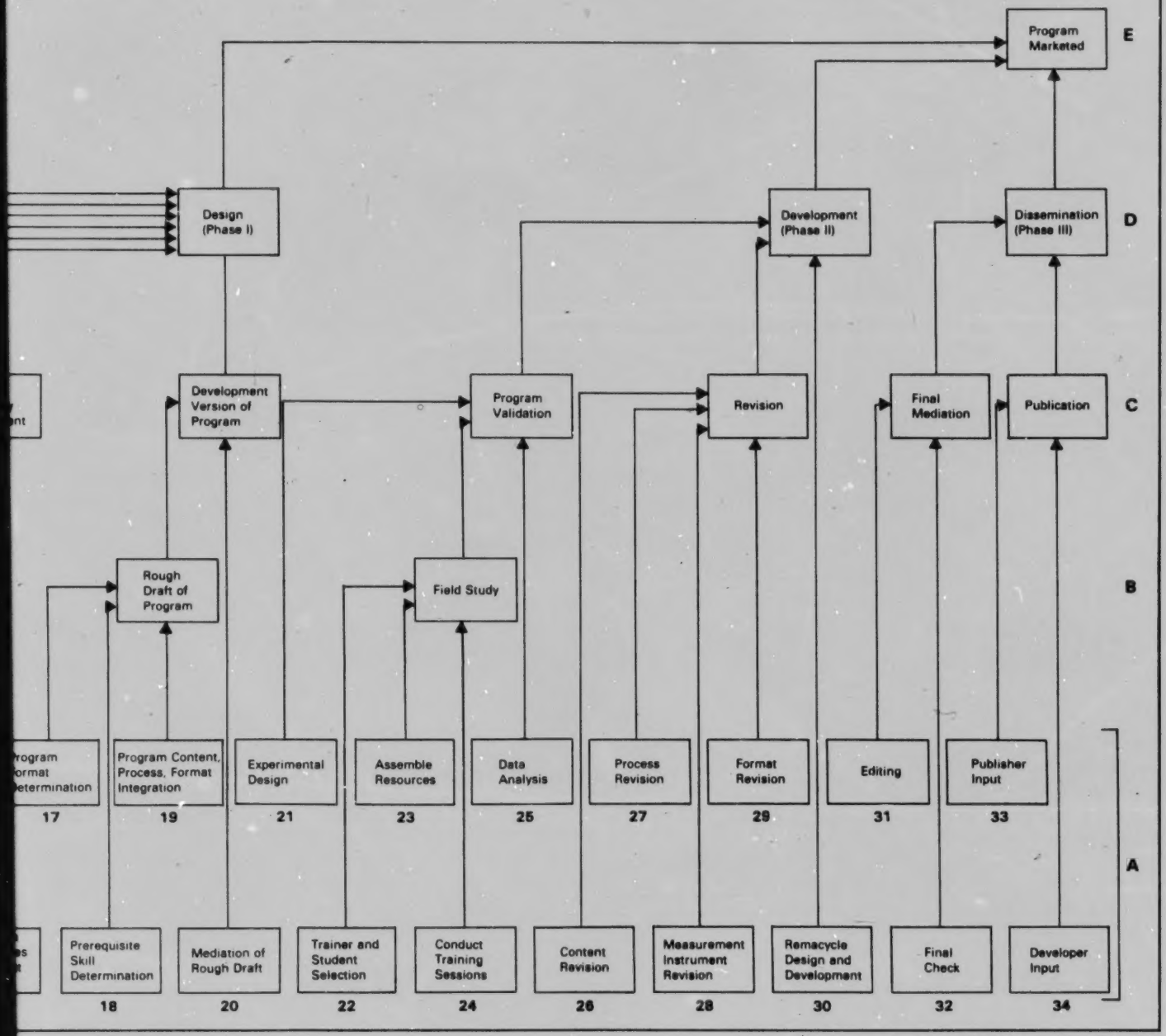
IMPLEMENTATION

Project MORE



NTATION LATTICE

February 1973



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for their nature on each project. An example of an overall work-flow or event-sequencing chart is shown on the accompanying foldout for Project MORE (pages 15 and 88). Called an "Implementation Lattice,"* it includes all the events of the curriculum development process from its beginning to the eventual release and marketing of a final product. A still more elaborate analysis, with staff assignments, dates, and so on, can be helpful or essential to a large project such as Project MORE (and the more elaborate analysis has been made for this project), but it would be an unnecessary expense to a much smaller project (which instead can simplify the work-flow chart and mark important events and dates on each staff member's calendar).

Scheduling requirements, in summary, vary so much that no examples are typical for all curriculum development work.

Feasibility Review

Following whatever manner in which event sequencing and scheduling are carried out, and using all the information from the specification of the curriculum's product, a *feasibility review* or *analysis* should be made. Questions of whether a curriculum development plan is realistic and worthwhile depend on the particular curriculum, its product, target population, and many other factors. The list of questions begins with examples like these:

1. How much will the development effort cost? (Chapter 7)
2. How long will it take?
3. How expensive will it and its product be to schools?
4. Will the amount of teacher training required create resistance?
5. Will demands made on physical facilities, equipment, and other classroom and school conditions lead to teacher or school resistance?
6. Will the curriculum create community resistance?

For any one curriculum being reviewed, the questions go on and on. The feasibility analysis is not made to restrict a new development effort to "safe" measures, but to recognize and deal with potential problems. If teacher resistance to training can be anticipated, for example, the curriculum and its specified product can be re-examined to see if they may be redesigned or simplified without injury to the concepts or purposes. If not, then other possibilities may exist to overcome teacher resistance:

1. a more attractive teacher-training "package" with novel and useful items and ideas
2. appealing or engrossing training films
3. grant-supported training centers in well-liked locations (universities in popular cities or near the seashore or mountains), with all expenses paid for the teachers who attend
4. grant-supported payments to the teachers' schools for the time taken by training, so that teachers may take time off for the training while qualified substitutes teach their classes

Other examples of feasibility problems may be of many different types. Frequently these problems are wholly internal to a project's own organization and workload

Implementation has different contexts, and one or another applies to this and each succeeding chapter of the book. A design is drawn up (planning), then it is carried out (implementation); this is the broadest context. Usage in these guidelines (except for examples from authors' projects) will be limited to putting a new curriculum into effect in schools, *after* its development, trial use, evaluation, and revision; this is perhaps the narrowest context (see Chapter 6).

and are not affected by teachers, schools, the community, or other factors. An actual instance drawn from the experience of Project MORE follows:

> In Project MORE's early days, the developmental staff hoped to create a sewing program for the trainable retarded. After completing an overall program implementation lattice, the staff began plotting a separate developmental prediction graph for each product to be developed—with the sewing program being one of these. Loading charts (predicting staff time involvement with the proposed program) disclosed that the development of this one product would take some 32 months. Since the entire project had to be planned on a year-to-year (and indeed, product-to-product) basis, it was obvious that a sewing program from Project MORE was not feasible—this despite the need and rationale for such a product.

A good feasibility analysis probably will turn up at least a score of questions about a curriculum project, and often many more. Ignoring the problems and putting off solutions may merely magnify the potential difficulties when they become imminent or real. The problems should be foreseen. Tentative solutions for those that involve teachers, students, or schools can be tried out in field-test or pilot-test classes, and the feedback applied to the development effort before it meets its greater test in the schools generally.

Field Test Arrangements

The difference between anticipation and experience has led to a rich variety of aphorisms in history and literature. "No... knowledge can go beyond experience," "The proof of the pudding is in the eating," "Experience is a hard teacher," "The longest moment is before the battle"—these and many other sayings reflect the acquired wisdom of "trying it out" (no matter what "it" is) before taking a final position.

Further arguments in favor of advance arrangements for pilot-teaching or field testing seem unnecessary. These arrangements are a *must*, and it is only how to go about them that requires comment.

Many school systems are oriented to change and will volunteer to help with testing plausible new programs. Others are reluctant to consider alternatives to existing programs that their teachers or administrators believe are "working." Choosing a sample from either extreme, to the exclusion of the other, is not representative of the range of situations a new curriculum and its product will face. Nor can it take into account urban, suburban, and rural (or consolidated) school differences, geographical differences, ethnic differences, and others.

A small curriculum project with restricted budget may have to overlook many considerations and seek pilot-teaching arrangements where it can, among interested school systems (usually nearby) which will assume or share the costs. It may not be able to control variables in teacher experience or qualifications, school facilities, target population differences (regionally or ethnically), and a number of other factors or characteristics of the teachers, the students, or the schools.

A larger project should include in its budget (time and money) a plan to control as many of these variables as possible. Ideally, provisions should be made for:

1. inner-city and other urban test sites; suburban sites; rural sites
2. regionally representative sites
3. ethnically representative sites

4. socio-economically representative sites
5. teachers of varying background preparation in the subject matter of the curriculum
6. teachers of varying experience (number of years teaching)
7. teachers of varying attitudes toward the curriculum (prior to training in its use)
8-?(for schools, school facilities, and open-classroom vs. traditional-classroom climate)

Yet even for large projects the number of known variables is frequently too great to control. Plans may be made to combine related ones (for example, Numbers **1-4**) in a simpler pattern, and to ignore or take a modal sample of others. A modal sample is biased, but *toward the mode or greatest frequency* of existing conditions. An example, applied to teacher selection, is

"certified teachers of at least two and at most twenty years of experience,"

eliminating beginning and second-year teachers, those nearing retirement, and any who are not fully certified.

At the time the project staff has started developing the product, the field-test arrangements should be in progress. The staff's administrator or director should be corresponding with superintendents of schools for districts which have expressed interest and for other districts of the staff's choice. At least *four times* the number of schools in each category of the staff's selection probably should be contacted. Many of these will drop from consideration because of disagreements over requirements made for

1. teacher training
2. student testing
3. teacher feedback procedures
4. student feedback and interview procedures
5. financial costs of participation (unless these are paid for by the project)
6. uniform curriculum-administering procedures from one test site to another (overriding certain local administrative or teaching procedures)
7. length of commitment (sometimes several years)

Other schools will drop from consideration for less predictable reasons, including

8. teacher or administrative turnover (with a lack of interest from new personnel)
9. community or school board resistance
10. unexplained changes of mind

At best the number and locations of test sites will remain somewhat uncertain until field tests are ready to begin. To reduce the uncertainty, the experience of many projects suggests that the project should pay some or all of the costs of participation and enter contracts with the field test schools of its choice. The contracts provide a guarantee of costs and the project's materials and consultant services, in return for the schools' participation according to the criteria set by the project's staff.

An illustration of an application form for participation in field tests is reprinted on the following page. Some of the requirements for participation were

APPLICATION FOR PARTICIPATION
FIELD TEST OF *ME AND MY ENVIRONMENT*

School District (Name and Address)
East Metropolitan School District
2832 East 68th Road
Large City, U.S.A.

Authorizing Administrator
Dorothy Dunville
Coordinator of Special Education

We wish to be considered for participation in the 1972-75 field test of *ME AND MY ENVIRONMENT*. The following information relates to the evaluation conditions required:

1. The following teacher has been selected and agreed to participate in the field trials for the full three-year period:
   Name: Thomas O'Malley, Kennedy Junior High
   Address: 2900 East 68th Road, Large City, U.S.A.
   Years Experience: 6 total: 4 at this school 4 with this age EMH

2. The class will participate for all three years, will be grouped to include as many seventh graders as possible, and will probably have the following distribution:
   Name of School: Kennedy Principal: Mrs. Carolyn Ostenbeck

No.	No.	No.	Circle	
5 seventh	10 boys	7 white	Yes (No)	Self-contained class
7 eighth	5 girls	7 black	Yes (No)	Departmentalized science
3 ninth		1 other	(Yes) No	Separate EMH facility
			Yes (No)	Previous science instruction

Please attach a general description of the school schedule.
Not available until September — will comply.

3. The class will include only qualifying EMH children (50-80 IQ range) for which recent test scores (September 1970 or later) will be provided.
   Will comply.

4. Community Characteristics: Please assign rough percentages to each category below:

A. The community served by this school is:

	% of students
Inner city, ghetto	10
Urban	90
Suburban	—
Rural	—

B. The families served by this school are:

	% of students
Professional, managerial	10
White collar	20
Blue collar	67
Farm labor	—
Welfare, ADC	3

C. The ethnic groups served by this school are:

	% of students
White	84-85
Black	15
Spanish-American	0
Other:	—

RETURN TO: ME AND MY ENVIRONMENT Staff
Biological Sciences Curriculum Study
P. O. Box 930
Boulder, Colorado 80302

COMPLETED BY: Dorothy Dunville

FURTHER CORRESPONDENCE SHOULD BE DIRECTED TO: Dorothy Dunville
Coordinator of Special Education
2832 East 68th Road
Large City, U.S.A.

included in it, but in order not to make them appear prematurely too selective, others were negotiated in the contract stage as *control or training requirements* in exchange for

a. full or partial cost reimbursement
b. recognition as an official test site, and
c. acknowledgment in the revised, final product for contributions to the development of the curriculum

The contract setting forth *all* conditions was subsequently entered, and the test teachers then traveled to a pre-selected center to begin their orientation and

training, initiating a three-year relationship between their schools and the curriculum project's staff.

Often, after field-test arrangements have been made, when word of the project is being spread from the test sites to other schools—requests for participation will continue to be received by the project's staff. If arrangements can be made with additional participating school districts at their own expense, the interests of both the project (see Chapter 6, Dissemination and Implementation) and of these school districts may be served.

A Look Ahead

Staff selection and assignments, scheduling, product development, and negotiations with schools as test sites are difficult to follow in detail without following the history of a particular project. An interested developer should arrange to visit the staffs and headquarters of several existing projects and view their problems and progress personally. (A list of many curriculum development projects for mentally retarded children may be obtained from the Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education and Welfare.)

Though an obvious relationship exists between selecting field test sites and providing teacher training, the topic of training is too complex to be added as a concluding section to this chapter:

1. First the project staff, or part of it, must be trained in the new developmental task; and the staff members who will train teachers must be trained.
2. Then the field-test teachers must be trained.
3. And finally, guidelines for training all other teachers who will ultimately use the curriculum must be established; pre-service and in-service programs must be explored and initiated at colleges and universities which are major teacher-training institutions, and in-service workshops must be planned by the publisher or producer of the curriculum's product or materials.

Most of these tasks in training are considered in the chapter that follows.

Bibliography

Cegelka, J. A., and **W. J. Cegelka.** A Review of Research: Reading and the Educable Mentally Handicapped. *Exceptional Children* **37**, 1970, pp. 187-200.

Cook, D. L. *Program Evaluation and Review Technique: Applications in Education.* Cooperative Research Monograph 17, U. S. Office of Education, Department of Health, Education and Welfare. OE-12024. U. S. Government Printing Office, Washington, D. C., 1966.

Davis, R. H. *et al. Learning System Design.* Michigan State University, 1972.

Dahllöf, U. S. *Ability Grouping, Content Validity, and Curriculum Process Analysis.* Teachers College Press, Columbia University, New York, 1971.

FEC (Federal Electric Corp.). *Programmed Introduction to PERT: Program Evaluation and Review Technique.* John Wiley & Sons, New York, 1963.

Gozali, J., and **E. L. Meyen.** The Influence of the Teacher Expectancy Phenomenon on the Academic Performance of Educable Mentally Retarded Pupils in Special Classes. *Journal of Special Education* **4**(4), 1970, pp. 417-24.

Gronlund, N. E. *Stating Behavioral Objectives for Classroom Instruction.* The Macmillan Company, New York, 1970.

Handy, H. W., and **K. M. Hussain.** *Network Analysis for Educational Management.* Prentice-Hall, Englewood Cliffs, New Jersey, 1969.

Haskett, Sister M. S. An Investigation of the Relationship Between Teacher Expectancy and Pupil Achievement in the Special Education Class. Unpublished Doctoral Dissertation, University of Wisconsin, Madison, Wisconsin, 1968.

Heintz, P. The Relationship Between Teacher Expectations of Academic Achievement and Current School Achievement of Educable Mentally Retarded Pupils in Special Classes. Unpublished Doctoral Dissertation, Teachers College, Columbia University, 1968.

Hewett, F. M., and **Forness, S.** *Education of Exceptional Learners.* Allyn & Bacon, Boston, 1974.

José, J., and **J. J. Cody.** Teacher-Pupil Interaction As It Relates to Attempted Changes in Teacher Expectancy of Academic Ability and Achievement. *American Educational Research Journal* **8**, 1971, pp. 39-49.

Kolstoe, O. P. *Teaching Educable Mentally Retarded Children.* Holt, Rinehart and Winston, New York, 1970.

Lehrer, B. E., G. I. Melnick, and **S. Greenberg.** Teacher Evaluations of Curriculum in a Curriculum Development Program. *Educational Technology*, 1973, pp. 31-36.

MacMillan, D. L. The Problem of Motivation in the Education of the Mentally Retarded. *Exceptional Children* **37**, 1971, pp. 579-86.

Martin, E. W. Programs of the Bureau of Education for the Handicapped, U. S. Office of Education. *Programs for the Handicapped.* Secretary's Committee on Mental Retardation. U.S. Department of Health, Education and Welfare, 1970.

McLean, R. The Effects of Teacher Expectations on the Achievement of Educable Mentally Retarded Pupils. Unpublished Doctoral Dissertation, University of Kansas, 1968.

Moder, J. J., and **C. R. Phillips.** *Project Management with CPM & PERT.* Second Edition. Van Nostrand-Reinhold, New York, 1970.

Steele, J. M. *Arranging Field Tests: Characteristics of Sites and Students,* Formative Evaluation Report 1 for ME AND MY ENVIRONMENT. Project No. 1520-75, Grant No. OEG-0-9-152075-3720(032), Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education and Welfare. Biological Sciences Curriculum Study, Boulder, Colorado, June 1973.

CHAPTER **FOUR**

Training

Training begins at home, for

1. the project staff

and extends at successive stages in the project's work to

2. field-test teachers
3. college and university personnel who train teachers
4. other teachers at in-service workshops sponsored by the publisher or distributor of the curriculum's product

The first three each involve a different problem in training. The fourth is new chiefly in who is to pay the costs; its techniques evolve from the first three. (It is considered under dissemination and implementation in Chapter 6.)

Staff Training

Planning for staff training will have involved a curriculum developer's attention even as the final selections of staff members are being made (Point **4**, page 23). The assignment of someone—presumably to be on the staff—to begin the process of staff training is necessary to

- orient the new group to the goals of the project
- explain the unique needs of the target population
- identify the roles of the different personnel by background, training, and skills

The questions to be considered in planning and conducting the training are

1. What are the training needs?
2. Who will require training?
3. How is the training best provided?
4. Where and when will it be done?

The answers involve primarily the person responsible for initiating training. But this is true only at first. As the staff members become oriented the answers to the questions change; each member takes on training responsibilities toward others. The idea is for each person to instruct others in making their work more efficient by calling on his or her skills during planning and product development.

Overall the training requirement therefore gradually shifts from one-directed to other-directed and from frequently scheduled sessions to less frequent ones to regular in-service working relationships.

For some time, however—at least well into the staff's rotational assignments of training responsibilities—the training sessions will pre-empt the developmental work that lies ahead (and should be accurately accounted for in the project's flow chart or event-sequencing, PERT charts, or other analyses—see Chapter 3). This time will co-exist with planning time and should make planning more efficient, given training benefits such as these:

a. Developers and writers often work under conditions that make collecting feedback inefficient or long-delayed; a staff evaluator can explain this problem and suggest how some kinds of evaluation can be designed and the feedback collected in time to influence early revision efforts.

b. In turn, before receiving input from the developers, an evaluator may have in mind too many options for evaluation designs; the developers and writers can suggest which parts of the curriculum will be most crucial to assess, helping the evaluator focus on the most appropriate design.

c. A writer or writer-editor can train others in levels and styles of writing appropriate to the target population and to the educational climate.

d. An artist can train others in the uses of styles and techniques in artwork, for children of different ages and levels of development. Art, like writing, may be right or wrong in level of comprehension, message, setting, and contextual clues.

e. Similarly, a typographic designer can train others in formats, type fonts, and type sizes appropriate to different audiences.

f. A media analyst and a special education consultant can combine talents to train others in choices and uses of various media for various learning tasks, for the target population.

Other examples are limited only by the variety in staff skills and their application, and while a very small project will not have all these specialists on its staff, its two or three staff members will nevertheless share their skills. (Free-lance writers, editors, artists, media analysts, and others may be located to consult with them when necessary.) A large project may have these and other specialists on the full-time staff.

Both small and large projects may elect the same or comparable procedures for

1. determining the staff training objectives
2. developing a training "package"
3. establishing performance criteria

The training package would seem more important to the large project, but for staff use it may be unjustifiably expensive and time-consuming to develop. Yet for either a small or a large project it may be easy to borrow: films on a rental basis, books on library loan, and similar teaching and learning materials already available in a variety of media can demonstrate the successes and failures of other approaches to a curriculum for the target population.

The staff training objectives and performance criteria may or may not be formally specified. On the one hand they are indirectly in evidence anyway, in the project's detailed plan for developing a curriculum. But on the other hand they define another factor that is not always self-evident, *ethics* in curriculum

development. If, for example, a gap appears—and widens—between a project's expectations and achievements, shortcomings can be masked by a "crash" attempt to put together the product (since the product is the visible test of the project's existence). Yet a project which comes to this end has not proceeded ethically, or as planned, and was not a feasible curriculum development effort because of flaws somewhere in its conception, procedures, schedule, or staff. Its product merely joins others that may become parts of a borrowed training package of mixed successes and failures for the staff of another, future curriculum project to consider in its initial training.

This suggests a reason to define carefully and record in written form the staff training objectives and performance criteria *if* a developer feels the staff will benefit from constant re-examination of its ethical standards. Some individuals are offended by this forthright procedure; others are spurred to better efforts. If the standards are to be recorded and circularized, a useful starting point toward defining them is to go over the project's rationale (Chapter 1), then to ask the four training questions (page 35) about each of the following:

needs assessment
objective-setting
the curriculum's theory and design
content specification
media determinations, or mediation
evaluation
dissemination
marketing considerations

Gradually, as the training objectives and the performance criteria are separately identified by individual and by role, the project's focus can continue to move on through orientation and training to beginning the developmental tasks. In fact, these successive processes should merge almost indistinguishably.

Training for Field Tests

Later, as the prototype product is being developed—but long before it is ready for pilot-teaching or field testing—plans for training the teachers who will be involved must be completed and a training program for them designed.

Nearly every change in curriculum in the schools today involves some teacher training. With pilot teachers, the problem is intensified (because they are the first teachers to be trained); yet it is subject to some controls (because they are a known audience, selected according to the project's own criteria). The teachers' selection was covered in Chapter 3; from the point at which they are known individually they should be considered in the context of staff. They may not (or may) be *paid* staff members, but their role is as critical to the progress of the curriculum as the role of the developers, or of the evaluators. To some extent this is also true of the administrators of the schools which will be field test sites.

Both the field test teachers and their local curriculum coordinators or principals (possibly the superintendents, too) should be invited to participate in training. The pattern of earlier staff training may have been informal and has no bearing on the stricter demands of planning and the detail of execution of training for field tests—for several reasons:

- the teachers will not have had day-to-day exposure to the staff from the project's beginning—or the information or *esprit de corps* that daily staff contacts give rise to
- the teachers cannot remain with the staff on a day-to-day basis even after becoming affiliated with it; except for training sessions, they will be at the field test sites, engaged in teaching
- the field test teachers therefore cannot confer fully satisfactorily with other staff members at any time except during training (though they later will confer by mail, phone, and for some, an occasional brief visit)

The training must be planned accordingly, beginning with

1. Orientation

and

2. Training goals and priorities
   - **a.** Utility with the curriculum
     1) Content
     2) Process
     3) Media familiarity and use; format changes
   - **b.** Mastery of the curriculum(?)
     (The question of utility vs. mastery)

Under Point **2**, priorities in training goals involve the question not only of depth of training (**2a** and **b**) but of its distribution across content, process, and techniques [**2a** 1), 2), and 3)]. Teachers will need training in *content* if the subject matter is new, or if it is interdisciplinary, or if it involves new themes or skills. They will require training in *process* if teaching methods, learning methods, or teacher-learner interactions are modified by the curriculum, or if learning in relation to behavioral objectives is unfamiliar to them. They may even require training in the use of multi-media approaches and the equipment involved in media or format interchanges.

The question of training for utility with the curriculum, or for mastery of it, is complex. Teachers are often inclined to seek only the utilitarian level of familiarity with a curriculum and "get on with it." During field tests this may be sufficient (extended training courses and workshops are very costly) *if* frequent reinforcement is provided through staff contacts, site visits, and so on. Much more is to be

said of the problem of utility vs. mastery, as the concerns of training continue to be considered and a training outline continues to unfold.

3. The training course or workshop(s)
   a. one-time, continuous sessions ("mass practice")
   b. a series of progressive workshops with field-test teaching time between them ("distributed practice")

The question of reinforcement favors **3b** over **a**. Utility vs. mastery is a question again in the two choices (**a** and **b**) and also in the more basic choice between workshops (relatively brief by definition) and a longer, formal course.

4. The training package
   a. multi-media
   b. personalized
   c. modularized

A professionally-produced package, rich in interest value and ideas, is expensive but can be offset in its cost by a shorter or more efficient training period given its development and use. Training films are probably the most expensive method of delivery of information; their cost for two or three pilot or field-test teachers may be prohibitive, yet for twenty or more field-test teachers (and their curriculum coordinators or principals) an eventual saving. Good design and film editing produces an impact that may be even more selective than firsthand observation. A film (if produced) and a field trip could focus on a classroom situation with a part of the curriculum, in a school whose target population students were "borrowed" for this purpose.

Printed materials in the training package should be attractively produced, to reflect the effort in development; multilithed or Xerox® copies of teacher's materials are too often assumed to be makeshift (and if cost-accounted, usually are as expensive as some methods of printing).

The training package should be personalized (Point **4b**), in the sense that each field-test teacher is a student who for parts of the training proceeds individually to discover some of the students' experiences and the attainment of the related behavioral objectives. And finally, the training package should be modularized (Point **4c**), including tape cassettes of training discussions, so that the teachers can take the package with them and re-process all or parts of it for review or reinforcement whenever they choose, at their schools before and during the field tests. (Films may be loaned or circulated on request.)

5. The product
   a. completed product with, or in, the training package
   b. first installment in the training package; the balance scheduled for delivery as needed

For many projects, Points 3 and **5** will need to be correlated. If the teacher's materials or students' materials are not completed at the time of training for field tests, they must be completed in installments as needed. It is very important to meet developmental deadlines and get each subsequent installment of materials to teachers before they have completed use of the previous ones with their classes. At their training sessions they must be comfortable in the assumption that these deadlines will be met.

6. Performance criteria
   a. teacher
   b. student

Performance criteria for teachers are the behavioral objectives that will assess the success of the training program; those for students are the behavioral objectives of the curriculum and its product (see Chapters 1, 2, 3). Certain criteria for teachers will already have been expressed in the method of their selection for participation in the field tests. Others must be set as standards of the effectiveness of training and of the subsequent use of it in teaching.

Again, utility with the curriculum vs. mastery of it becomes a consideration, in setting the criteria. For example, one of the two following conceptions of performance criteria reflects utility, while the two together suggest mastery:

> **Performance criterion:** Given behavioral objectives for a cluster of six student activities and the teaching and learning materials for five of them, identify the learning tasks, content, and procedures necessary to the sixth, and develop a written plan for that activity.
>
> **Performance criterion:** Given behavioral objectives for a cluster of six student activities and the teaching and learning materials, demonstrate the ability to teach the cluster... [according to a cited level of student performance, limitations on time or recycling or reteaching, etc.].

Monitored teaching should be one of the instruments used to assess performance criteria. Target students may be available at a nearby school during the training session. Certainly a staff member should visit each teacher's school more than once during the field tests and assess teacher performance.

One or more of the performance criteria and a written test should assess the teacher's ability to distinguish teaching options in the curriculum (Chapter 2, pages 20-21) from teaching practices or decisions that violate the curriculum's intent or effect.

A detailed list of performance criteria differs from project to project but should be clearly defined in writing, along with methods of assessment and data collection for the training sessions and the subsequent field tests.

7. Data collection (feedback)
   - **a.** Mechanisms
     1) Site visits by staff observers
     2) Teacher interview
     3) Student interview
     4) Teacher data sheets and weekly reports
     5) Teacher opinion survey
     6) Student opinion survey
     7) Student pre- and post-tests
     8) Comparisons of field test classes with control classes
     9) Teacher effectiveness ratings
     10) School environment ratings
     11-?)(see Chapter 5)
   - **b.** Areas
     1) Teacher interest
     2) Teacher performance
     3) Student interest
     4) Student performance
     5) Product effectiveness
     6) Suggestions for revision
     7-?)(see Chapter 5)

Feedback is the right arm of the evaluation effort and is discussed along with it in the next chapter. The importance of each of the data collection procedures that the staff has selected must be established beyond any question in the teacher-training sessions. Why *these* procedures have been settled upon, from all those possible, is another aspect of the training, because the teachers must understand the data collection techniques if they are to be personally committed to all the hours each week the data forms and procedures will require of them.

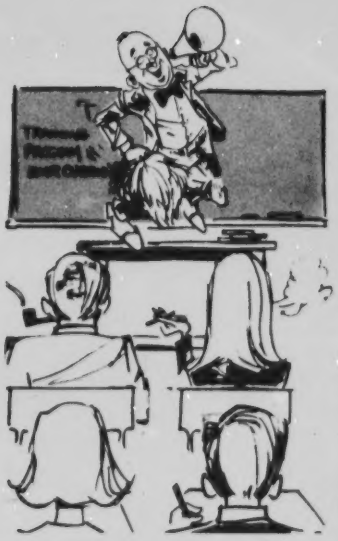
8. Time line
- **a.** event sequencing
- **b.** PERT
- **c.** other

From the point at which the field test teachers enter the project's time line it is their time line, too. The method of event sequencing selected earlier by the staff, for the developmental effort (see Chapter 3), should be applied during the training session to a comprehensive picture for the teachers. It will stress the importance and the timing of their contributions, make them a part of the project more officially, organize all the elements of the training session and of field-test teaching for them, and let them know when to expect further input from the staff (deliveries of installments of the product, scheduled site visits, further training sessions, and so on).

There are many other considerations of teacher training—selection of physical facilities for it (Point **10**, page 23) and of staff personnel to conduct it; the expenses (Chapter 7); the risks of a curriculum that involves too heavy a demand in teacher training (Chapter 2); how teachers are to obtain assistance when problems occur; and so on. A large project needs to plan with infinite detail, while for a smaller project even those topics developed as numbered points in the preceding outline appear excessive—but they are not when considered as guidelines rather than requirements. Knowledge of these points can be of benefit even when the pilot teachers are from one's own or an adjoining school district.

At least one persistent question carries over into other arenas of training (colleges which train teachers, and workshops later sponsored by the publisher of the curriculum's product); the uncertainties involved in accepting a criterion of utility with the curriculum vs. mastery of it. It is taken up again in the section which follows.

Training in Colleges and Universities



One of the eventual responsibilities for implementation of a new curriculum lies with the colleges and universities which train teachers.

If most teachers are inclined to seek only utility with a curriculum, the professional staff of teacher-training institutions will seek mastery: the *theory* of curriculum planning and implementation is their interest.

But at times, getting their initial interest at all is a problem. Usually only a minor percentage of the inquiries a project receives in response to announcements of its work and progress are from colleges and universities; almost all are expressions of interest from school systems.

There are ways to attack this problem:

1. Invite some key college and university personnel to the project's headquarters for visits.
2. Invite them to the teacher-training workshops.
3. Plan the teacher training as a college course for credit, with expenses to be paid by the project but with the sponsorship of a well known college or university.
4. Offer the services of qualified staff members to nearby colleges, for teaching innovative methods courses. (The project's schedule could be set up to accommodate a limited number of methods courses.)
5. Seek implementation grants to colleges from funding agencies; and, given a funding agency's interest, contact colleges and universities to participate.
6. Offer workshops at national and regional educational meetings and conventions, especially when expected attendance by college and university personnel will be high.

There are other possibilities, too, and once the conservatism of college campuses is breached, a new network of communications can be established. A valuable forum for the persistent question of utility vs. mastery for classroom teachers is also established—for teacher-training institutions have long been concerned with the question:

> How can *change* introduced by a curriculum fare against the odds that it can persist?

An earlier project of some of the authors of this book throws light on the question. The changes introduced by the particular project were in both content and teacher-learner interactions, in a high school-level curriculum. Scores of workshops and summer institutes trained teachers to the degree of utility with the curriculum. The curriculum and its product quickly caught on. Eventually thousands of additional teachers were trained, in separately funded academic-year and summer institutes (sometimes having mastery as the goal, sometimes not). More than eight million high school students became involved in passing through the program, and others are engaged with it today. But a close look at current classroom practices reveals less change than the curriculum originally introduced: the changes in content have persisted, but those in teacher-learner interactions have not. An option unavoidably left to the teachers has brought the classroom climate partly back to the pre-existing one.

The problem implied by this example is that teachers (or anyone) can fit new ideas into their experience by changing the ideas as necessary. *To take the new experience intact* requires a different order of effort and training. It is here that colleges and universities become valuable allies as they teach both future teachers and in-service teachers. It is also here that most of the reasons are found for a field-test teacher's need for continuing input and reinforcement from a project's staff. And finally, it is here, too, that one of the problems of a publisher or distributor of educational materials lies, in training teachers for the implementation of a curriculum nationwide.

Other Perspectives

Chapter 6 on dissemination and implementation is a useful further study in relation to these topics on training.

The intervening chapter, Chapter 5, is sequential to this one in a project's developmental work, taking up feedback and evaluation prior to (and by extension also subsequent to) the product's revision for commercial publication.

Bibliography

Anderson, D. W. *et al* (Eds.). *Competency Based Teacher Education: Book 1, Problems and Prospects for the Decades Ahead:* Cooper, I. M. *et al* (Eds.). *Book 2, Systems Approach.* McCutchan Publishing Corporation, Berkeley, California, 1972.

Dubois, P. H. and **G. D. Mayo.** *Research Strategies for Evaluating Training.* AERA Monograph Series on Curriculum Evaluation. Rand McNally & Company, Chicago, 1967.

Joyce, B., and **M. Weil.** *Models of Teaching.* Prentice-Hall, Englewood Cliffs, New Jersey, 1972.

Kolstoe, O. P. *Teaching Educable Mentally Retarded Children.* Holt, Rinehart and Winston, New York, 1970.

Laska, J. A., and **S. L. Goldstein.** *Foundations of Teaching Methods.* William C. Brown Company, Dubuque, Iowa, 1973.

Long, N. J. *et al. Conflict in the Classroom: The Education of Children with Problems,* Second Edition. Wadsworth Publishing Company, Belmont, California, 1971.

Love, H. D. *Teaching the Educable Mentally Retarded.* McCutchan Publishing Corporation, Berkeley, California, 1968.

Mainford, J. C., and **H. D. Love.** *Teaching Educable Mentally Retarded Children: Methods and Materials.* Charles C. Thomas, Publisher, Springfield, Illinois, 1973.

Meyen, E. L. *Developing Units of Instruction for the Mentally Retarded and Other Children with Learning Problems.* William C. Brown Company, Dubuque, Iowa, 1972.

Myers, P., and **D. D. Hammill.** *Methods for Learning Disorders: A Survey of Selected Teaching Methods.* John Wiley & Sons, New York, 1969.

Neisworth, J. T., and **R. M. Smith.** *Managing Retarded Behavior.* Houghton Mifflin Company, Boston, 1973.

Rippey, R. M. *Studies in Transactional Evaluation.* McCutchan Publishing Corporation, Berkeley, California, 1972.

Smith, R. *Clinical Teaching: Methods of Instruction for the Retarded.* McGraw-Hill Book Company, New York, 1968.

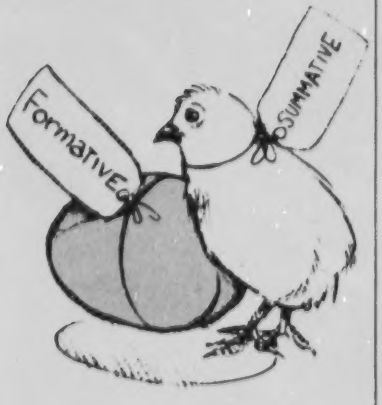
CHAPTER **FIVE**

Evaluation

In any curriculum plan the question is never to evaluate or not to evaluate. At every stage evaluative judgments are made. Everyone engages in them informally and subjectively, but other approaches are needed as well.

Standards and approaches or models for evaluation are varied, but all reflect the need for systematic procedures to obtain, analyze, and interpret information reliably.

Two Functions of Evaluation



The ultimate quality of the curriculum will reflect the design and use of *formative evaluation*, which brings two different stages and functions of the evaluative effort into focus:

1. *Formative evaluation*—the systematic assessment of each step in development to determine the effectiveness of content, strategies, format, and media, and maintain feedback necessary to revising and refining the curriculum
2. *Summative evaluation*—the final testing of the curriculum and its completed product in the educational marketplace; that is, in wide-scale use in the schools

Pilot-teaching or field testing is a part of the formative evaluation and usually is designed to yield much more detailed data, though on a smaller scale, than will be obtained in summative evaluation.

Many of the questions raised by this chapter apply to both listed functions of evaluation (and to other functions), but the project staff, during its work, will be more directly involved with formative evaluation. Indeed the evaluators who later will carry out the summative evaluation may not be directly associated with the project's history or development at all. (Occasionally those charged with formative evaluation are also outside the organization, though in close and frequent communication with the developers on the staff.)

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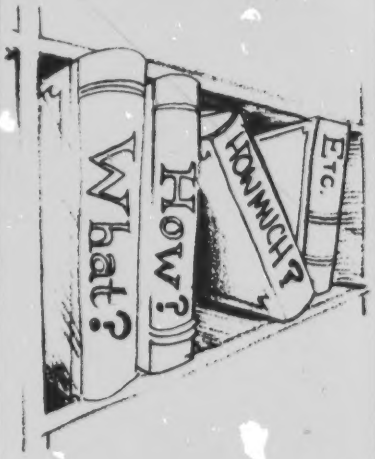
Systematic processes in evaluation are aimed at clarifications, assessments, and accountability *notwithstanding* human variables. The techniques used range from teacher testimony to formal, replicable experimental designs. No evaluative design has accounted for all the variables in teaching and learning, but approximating this goal is the intent of the evaluation effort. How close it may come to the goal is a function of time, budget, planning, the degree of accountability sought, and other factors.

Three questions suggest the essentials that must be explored.

The Basic Questions in Evaluation



THE BASIC QUESTIONS

1. **What does the project need and want to evaluate?**
   The next three sections of this chapter deal with this issue and consider the rationale or purpose, the intended audience (also basic to Question **3**), and the constraints on, or for, evaluation activities. (Further references are suggested on page 48.)
2. **How does the staff evaluate?**
   The fourth through ninth sections that follow discuss the issues involved in selecting and using evaluation methodologies necessary to answer the evaluation questions posed. (Further references are suggested on page 54.)
3. **What does the project intend to do with the evaluation information gathered?**
   The last section of the chapter discusses how this information is to be used. (Further references are suggested under "Organization of Results for Use" and "Reporting of Results" on page 54.)

Rationale for Evaluation

A rationale for an evaluation design has been inherent in the systematic procedures by which each successive step in curriculum development has been introduced and outlined (Chapters 1-4). "How do we know what we know?" is a persistent question that demands two-way communication as curriculum skills are applied; the new situations created in the classroom are rich in information important to decision-making in the continuing development process.

In simplest terms the role of evaluation seems obvious, but what is not obvious is the

prediction,
generation (if necessary),
recognition,
retrieval,

and

interpretation

of the most valuable information in organized ways, which permit control of as many variables as possible. Without this careful attention to the evaluative process, the worth or appropriateness of a curriculum is not verifiable. Likewise, *without an understanding of the goals or objectives of the curriculum*, attempting

to evaluate it may not be helpful*; *the evaluation purposes should coincide with the project goals*, or not even the questions asked and the methods selected for evaluation may be appropriate.

Audience for the Evaluation

In the early stages of a project's work, evaluation is directed largely toward the developmental processes themselves, and the audience is primarily the curriculum project's staff and the school district, university, or agency that is supporting the work. Through the stage of pilot-teaching or field testing the evaluation continues to be directed largely to the same audience, to provide data on which to base decisions for revision and further development.

Whether the educational community (at large or selectively) also should be an early audience is a subject of disagreement, even among the authors of this book. Some developers and evaluators express disapproval of the "premature release" or "publicness" of early evaluation data intended primarily for staff use. Others hold that it is a form of accountability—a responsibility of a project, no matter how early in its developmental work.

Ultimately the audience *will* shift to the educational community, and at the end the evaluation may also be publicized for the parents of the target population—and for others. However, the direction and limitations (or specifications) in the evaluation design are unlikely to be equally satisfactory to all the different audiences.

In chronological order, then, the audience is likely to shift from

1. project staff and support source

to

2. the educational community, and
3. parents and others

Scope or Delimitation

Total evaluation of a curriculum is never possible; it would far surpass the development effort itself in staff, time, and budget requirements. Hence, the evaluation to be undertaken must be reduced in scope to address a selected number of key questions.

The staff must conceive, consider, and rank the potential questions. It may also seek an external review and ranking. The nucleus of questions agreed on will indicate the evaluation for which the project will be held accountable.

Review by the sponsoring school district, university, or other agency may further reduce or revise the list of questions, usually for considerations of budget or of time.

The final list or set must satisfy these criteria:

1. Can answers to each of the questions be obtained for the curriculum and product as designed?

*Goal-free evaluation may be sought as an *added* approach, however. The evaluator begins with no knowledge of the curriculum and records his observations *only until he learns enough (or acquires bias) to cause closure* on his goal-free observations. (See J. M. Steele, 1974, pages 14-16.)

2. Will the answers meet the delimited purposes of the evaluation?
3. Will any of the questions generate too much or too little information?
4. Do the statements of the questions guide choices of dimensions for evaluation design, data collection, and analysis?

Numerous questions that deal with a broad representation of the curriculum in use cannot be investigated in depth; detailed questions on one or two aspects of the curriculum can be. A limited mix of these two may

- suggest the overall effectiveness and quality of the curriculum, and
- provide detailed insight into one or two (or a few) specific aspects of it

An example of the evaluation questions for one of the author's projects follows.

Major Questions for the Evaluation of ME AND MY ENVIRONMENT

Priorities 2nd test	1st test		*Priorities* 2nd test	1st test	
2.	1.	**Can the students perform the cognitive tasks?** a. What is the level of baseline knowledge or performance (prior to instruction)? b. What is the proportion and degree of successful student performance? c. Is there growth in performance of any general inquiry skills such as: observing, describing, identifying, comparing, associating, inferring, applying, predicting? d. Is one subgroup of children more successful with the materials than another? (stratified by IQ; retarded, disturbed, disadvantaged, disabled learners; level of cognitive functioning based on Piaget and reinterpretation of IQ tests; worldly–naive; disruptive–cooperative) e. Can students attend to activities that extend for several days or weeks? f. What degree of awareness of problem-solving skills do students exhibit? 1. Do students know what the question under investigation is? 2. Do students have some guesses or predictions of outcomes or answers? 3. Do students have a plan to get answers? 4. How do students go about getting answers? 5. What forms of information do students collect? 6. How do students organize the data? 7. How do students treat results?—are assumptions rejected, conflicts noted, overgeneralizations made?			e. What degree of excitement and involvement occurs? f. Is there growth in any general affective behaviors, such as openness to ideas, reality, orientation, objectivity, precision, confidence, perseverance, and responsibility?
			4.	3.	**How are the materials used (by teachers and students)?** a. Do the teachers use strategies as prescribed? b. For what reasons do some teachers deviate from the guide? c. Are the materials used *appropriately* (regardless of guide) by teachers?—by students? d. Does each student have the opportunity to perform each specific objective? e. Do most teachers need specific directions in using inquiry strategies? f. Do the materials involve the student in ways of applying the desired behavior? g. Is the curriculum successful with teachers who do not use inquiry strategies? h. Are there differences in achievement in high and low fidelity classrooms?
3.	2.	**How do the activities work (activity by activity)?** a. What are teachers' reactions to materials? b. What are students' reactions to materials? c. Are materials appropriate in all settings (urban/rural, older/younger, low ability)? d. Do students have positive attitudes toward science materials and their context (e.g., environmental concern, etc.)?	1.	4.	**What changes occur in general outcomes desirable for these children? (e.g., social and group participation skills; perseverance; attention to task, ability to follow directions, etc.)** a. Do the materials aid in the development in the child of a knowledge of himself in relation to his environment along with a tendency to apply this knowledge? b. Can and do students apply ideas learned in new situations? c. Do the materials aid the child in establishing a sense of responsibility to and for his environment?

Even relatively few evaluation questions can be investigated only to a depth or degree that may be less than optimal—sometimes *much* less. If the distinction or difference is a critical one, the budget for evaluation may need to be reassessed before the project is initiated.

One other basic dimension of evaluation is important—some attention must be given to the design, development, evaluation, and dissemination *processes* themselves. Whether it can be extensive or not, an evaluative account of these processes should be included in the scope of the evaluation effort in order to direct attention to the internal work of the project and help to promote and strengthen it.

SPECIFIC SUGGESTIONS AND REFERENCES BY PROBLEM AND TOPIC

PROBLEM	FOR IDEAS:
Purpose and Rationale	
Clarification of staff attitudes toward evaluation	Rippey (1973); House (1973); Gooler and Grotelueschen, pp. 316-24 in Worthen and Sanders (1973); March (1972)
Distinctions between description and evaluation of programs	Stake, "The Countenance of Educational Evaluation" and "Evaluation Design, Instrumentation, Data Collection, and Analysis of Data," in Worthen and Sanders (1973); Scriven, "The Methodology of Evaluation," in Worthen and Sanders (1973); Hastings, "Curriculum Evaluation: The Why of the Outcomes," in Gronlund (1968); Cronbach, "Evaluation for Course Development," in Gronlund (1968); Tyler, Gagne, and Scriven (1967); House (1973); J. M. Steele (1972); Sjogren, in Rippey (1973)
Clarification of program rationale and goals	Bloom, Hastings, and Madaus (1971); Gronlund (1970); Mager (1972); see also Chapter 2 of this book
Audience	
The program developers—their needs	Gallegher, Suriue, and Hayes (1973); Rippey (1973); House (1973); Stufflebeam *et al* (1971)
The support source—its requirements	Refer to appropriate source—school board or school district, state granting agency, university administration or Board of Regents, or Bureau of Education for the Handicapped, U. S. Office of Education
Obligations to schools, teachers, parents, the educational community	Rippey (1973); House (1973)
Scope	
Determination of what parts of the program to include in the evaluation	Tyler, Gagne, and Scriven (1967); Rippey (1973); House (1973); Stufflebeam *et al* (1971); Stake and Denny (1969); J. M. Steele (1973)
Appropriateness of an extensive research effort	Refer to the literature of the field, the project's source or level of support or funding, and the long-term commitments of developmental and implementation activities of the project
Setting of priorities	Stake (1970); Cyphert and Gant, in House (1973)

The Evaluation Design

Once the scope of evaluation has been determined, a systematic approach must be planned. That is, the evaluation design must be selected or devised.

Some examples of current approaches indicate their variety and relative advantages and disadvantages:

1. Tyler's Evaluation Plan (Tyler, 1942) emphasizes instructional objectives and sets the purpose of measuring student progress toward them. Pre- and post-testing are often a component of this plan.

   A problem with such testing is determining standards of performance and interpreting gains.* Other problems or possible risks include:

   a. oversimplifying objectives and ignoring processes

   b. focusing on objectives without assessing their worth

2. The Accreditation Approach (NS/SSE, 1960) emphasizes staff review of content and procedures of instruction. Authentication by outsiders is usually limited to opinions of the staff's counterparts or peers in the same field of instruction. The resulting professional judgments of content specialists and practicing teachers are valuable, but involve risks of:

   a. ignoring views of other audiences, including other interested educators

   b. ignoring possible alternatives in curricular approaches

3. Stake's Countenance Plan (in Worthen and Sanders, 1973) emphasizes description and judgment data in determining how various participants view the curriculum. Redundancies occur in the data because of the number and variety of sources from which it is collected, but a broad picture of the curriculum in use is obtained, together with conflicting expectations and unanticipated side effects. The model uses data matrices for intended and observed antecedents, transactions, and outcomes, and for their comparison with standards and judgments for these categories. The risks include:

   a. stirring up value-conflicts among the many participants

   b. dissatisfaction with "messy" or qualified findings inherent in the complexity of the evaluation situation and its variety of perceptions and relationships

4. Stufflebeam's CIPP Approach (Stufflebeam, 1967) emphasizes operations analysis for rational, continuous decision-making. A systematic procedure is used to identify upcoming alternatives, study their implications, and set up quality controls. The design, or system, is organized for sensitive feedback at each stage of the program's development, in order to anticipate decisions and contingencies. The principal drawback is the expense of so complex a model coupled with:

   a. the knowledge that some decision-making processes are unclear

   b. the risk of overemphasizing efficiency and underemphasizing the value concerns

These brief descriptions indicate that approaches to evaluation must be considered for their specific purposes and their limitations. The main requirement is that the approach fit the purposes and goals of the curriculum, in order to be useful and reliable. More complete descriptions of these evaluation designs are available, and condensed representations of 58 different approaches have been cataloged in a single source (S. M. Steele, 1973).

*Goodstein (1974b) gives a detailed critique of the use of student achievement data in formative evaluation.

Support for the Design

In support of a choice of approach to evaluation, a project should consider each of the following points. Ideally, the evaluation design and statements about each of these points should be in the initial curriculum plan itself.

1. *Congruence of the design with the purposes of evaluation as defined by the selected evaluation questions.* The choice of approach should lead to economical collection and treatment of data that will answer the questions asked. (Highly regarded designs are tempting—but modification may be necessary if they are not suitable.)
2. *Supporting evidence for the design.* If there is no clear precedent for the design, the argument for the new model should be compelling. If precedent does exist, it should be reported. "Seat-of-the pants" expediency should be avoided; the statement supportive of the design should be derived in part from a thorough search of previous experience and the published literature.
3. *Anticipated strengths and weaknesses of the design.* Forthrightness adds credibility to selection of a design; every approach has weaknesses. What are the trade-offs in the use of the selected approach? Outside criticism may be valuable in developing a complete list of *pros* and *cons*.

Feasibility—Personnel, Time, and Resources

The feasibility in time, cost, and personnel required to achieve the evaluation as planned must be reviewed carefully. Any approach or plan can run into difficulties—and an elaborate, time-consuming evaluation effort may be quite defensible from the viewpoint of personnel, time, and resources required if it will yield significant returns. Yet significant returns are defined one way by experimental design and another way by expediency, or the immediately practical considerations. For example, if the data and its analysis, no matter how informative, become available too late to help shape the final curriculum or its product's revision, the formative evaluation is lost.

If the budget is overextended (another very real concern), does the evaluation plan have logical "cut-backs"? It will make little sense to provide an elaborate evaluation design and have some of its components randomly deleted.

As for personnel, *who* will be selected to undertake the evaluation, and can they disassociate themselves from the vested interests of the project? The objectivity and credibility of their work will suffer if they cannot. Experimental methodology, statistical means, or outside intervention may be used to help achieve objectivity, but the most central question is whether the evaluators should be "inside" the project as staff members at all. The following section explores both points of view.

Internal vs. External Evaluation, and Selection Criteria

Most evaluation is internal. The pressures of development, feasibility factors, the value of firsthand contact with field-test classes and their instructors, and the importance of being available at all times of day for questions from, and

discussions with, the developmental staff are among the considerations that make a full-time project evaluator important—even essential.

Yet in the interests of objectivity some of the evaluation tasks can appropriately be contracted with outside evaluators, with the understanding that the selection of the basic evaluation approach remains a responsibility of the project staff.

Limits to the budget often prohibit both arrangements. If so, a choice must be made; if not, both evaluation services may be considered. In any event, the selection criteria for appointing the evaluators should be the same:

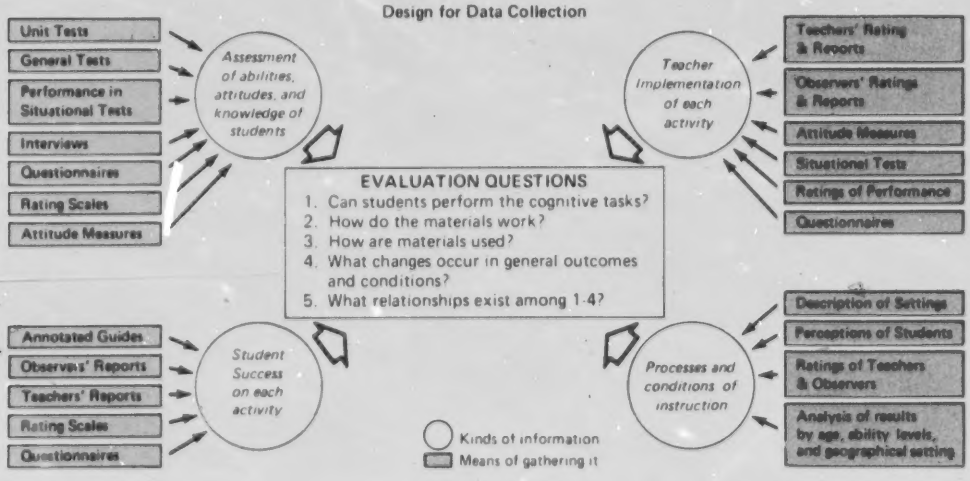
- the skills necessary to carry out the evaluation
- an awareness of, and possibly a sensitivity toward, the developers' problems and the needs of the target population
- any necessary skills in the content of the curriculum
- the commitment to implement the evaluation design selected by the project staff

For the external evaluator, time and availability by telephone and by written communication are also important. For the internal evaluator, a limitation on other duties is important; certain other duties may be necessary, but they should not detract from the work in evaluation. For both external and internal evaluators the issues of validity, accuracy (objectivity), and credibility of the evaluation results must be uppermost.

Sources of Data—Their Congruence with Purposes and Design

The evaluation plan should describe the sources of data the evaluators will work with, and provide justification for the choice of the particular data sources and the methods or instruments to be used to gather the data. What reliance, for example, is proposed for child-generated empirical data, teacher reactions, expert review, etc.?

The potential sources of data are many. The accompanying tables indicate sources related to materials being tested, and processes and problems encountered in their use or in training, or in instructor-learner strategies, and so on.



SOURCES OF DATA FOR FORMATIVE EVALUATION

(Sanders and Cunningham, 1973)

I. Internal Information
   A. Descriptive Information
      1. Physical specifications
      2. Rationale, goals, and objectives
      3. Content
      4. Other
   B. Critical Appraisal
      1. Author (developer)
      2. Experts (subject matter, media, psychologists, etc.)
      3. Students using the materials
      4. Teachers using the materials
      5. Relevant others

II. External Information
   A. Assessment of the effects of the materials on student behavior
      1. Achievement
      2. Attitude
      3. Skill
      4. Interest
      5. Commitment
      6. Other
   B. Assessment of the effects of the materials on teacher behavior
      1. Attitude
      2. Interest
      3. Commitment
      4. Competency
      5. Teaching strategy
      6. Other
   C. Assessment of the effects of the materials on the behavior of relevant others
      1. Parents
      2. Administrators
      3. Teachers not using the materials
      4. Students not using the materials
      5. The community
      6. Other

III. Contextual Information
   A. Student characteristics
   B. Teacher characteristics
   C. School characteristics
   D. Community characteristics
   E. Curricular characteristics
   F. Other relevant elements in the learning environment

The stages at which data can be collected are also varied and must be considered in relation to the design. At least five stages can be distinguished for study in formative evaluation:

1. *Exploratory studies prior to development.* Examples: need analyses, exploratory questionnaires; interviews; meetings with content specialists, teachers, and parents; reviews of the literature; empirical studies of students' knowledge and abilities in the affected area; and other studies.
2. *Process studies prior to, or early in, development.* Examples: effectiveness of various media; appropriateness of different classroom strategies; the need for, and format of, a teacher's guide; alternatives in sequencing of content and activities; potential effects of computer-assisted instruction or use of other technologies; and so on.

3. *Product studies after first stages in development.* Examples: reviews of first drafts by specialists in the subject area, by specialists on the target population, and by instructors, psychologists, and others who work with the target population.
4. *Training studies immediately preceding and during field tests.* Examples: assessment of instructors' skills; assessment of instructors' background information; reassessment of what is needed in a teachers' guide; studies of the effectiveness of instructor training.
5. *Pilot-teaching or field-test studies.* Examples are too numerous to list, for at this stage the product is being tried out with sample populations of students and may include periodic testing of instructors and students, observations, and more frequent assessments of many kinds directed at the students, the instructors, and others. Pre- and post-tests may not return data as quickly as needed for use in revising the product, and more frequent assessments may be necessary. The field-test conditions should generalize to future use of the curriculum as nearly as possible, and in this context some of the strengths and weaknesses of various sample sizes are indicated in the table that follows.

STRENGTHS AND WEAKNESSES OF FIELD-TEST SAMPLES OF SMALLER AND LARGER SIZES

Small Samples

(1- to- 10 classes; 1- to- 100 students)

STRENGTHS:

- Detailed data for individual students can be obtained
- Data can be collected quickly
- Teachers and students can be carefully screened and selected
- Fidelity of treatment can be closely monitored
- Reliability of observation can be assessed by means of simultaneous independent observations
- Training problems may be simplified
- Intensive studies can be undertaken
- Conditions can be carefully controlled
- Staff developer can serve as teacher or observer
- Test can be dynamic: revisions can be introduced during field trials
- Some data collection techniques can be utilized that are too expensive to use with large samples

WEAKNESSES:

- The sample may not be representative
- Conditions and results may be atypical
- Results may not be statistically conclusive; or, statistical treatment may be impossible
- Missing data for a class is more serious than with large samples
- Minimal dissemination may occur

Large Samples

(50 or more classes; 500 or more students)

STRENGTHS:

- The sample can be more representative and allow generalizability
- More conclusive results are sometimes possible
- Multivariate and other forms of statistical analysis can be utilized
- Dissemination of the curriculum can be facilitated
- Training materials can be tested in conjunction with the program

WEAKNESSES:

- The range of data possible to collect is reduced
- Logistics to maintain the field tests are complex
- Verifying whether the intended "treatment" occurred in all classes is impossible
- Monitoring of data is difficult and expensive
- Some data collection techniques become impractical (e.g., observation, interviews)
- Reliability of data collection can be a problem
- Control of conditions in general (and compounding and confounding of variables) is a problem

Early consideration should be given to the amount of information that will be generated by the selected studies. The time and resources necessary to reduce the data and provide the answers that are sought must be allocated to deliver the information at the time it is needed. (A problem repeatedly encountered has been insufficient time to reduce and report a mass of data collected in support of an evaluation design.)

Treatment of Data (Legitimacy, Credibility, Utility)

Only the data that can be effectively handled in a reasonable time should be included in the data-gathering procedures. The analysis of this data must at the minimum be organized to include:

1. *Assessment of validity and legitimacy.* Both expected and unexpected variables will be encountered in the review of data against instruments used, adequacy of the target sample, representativeness of persons consulted, and geographic and other concerns. The identification and interrelationships of all the assumptions of both the project and the evaluation approach are a necessary framework for reporting results.

SPECIFIC SUGGESTIONS AND REFERENCES BY PROBLEM AND TOPIC

PROBLEM	FOR IDEAS:
Selection of Evaluation Framework Review of alternatives	Worthen and Sanders (1973); S. M. Steele (1973)
Pros and cons of choice	Check congruence of evaluation approach with project purposes; submit plans to outside reviewers
Feasibility of plan	Check budget and timeline; draw comparisons with time and task analyses of other projects
Timeliness of results	Check evaluation timeline against program development timeline
Selection of Evaluators	Scriven, in Tyler (1967); House, "The Conscience of Educational Evaluation," in House (1973)
Data Considerations Selection of data	Stake, "Measuring What Learners Learn," in House (1973); Bloom, Hastings and Madaras (1971); Sanders and Cunningham (1972); Sjogren (1970); Rosenshine (1970)
Collection and sampling procedures	Gage (1963); Sidman (1960); Travers (1973)
Criteria for Judging Success	Review by project staff; survey of standards held by various audiences; Stake (1970); Gooler, in House (1973)
Organization of Results for Use	No procedures have been described for this critical dimension; J. M. Steele (1974)
Reporting Results	House (1973); refer to examples of various evaluation reports in the literature

2. *Assessment of credibility.* The results and how they were obtained must serve the purposes of the curriculum project's staff and be believable to those outside the project. Part of this acceptance depends upon the thoroughness with which the evaluation has been designed and described; part depends on reporting results in terms that are understandable to the particular audience to which they are directed.
3. *Assessment of utility.* The final test of an evaluation effort is whether the results provide specific guidance in revising the product to improve its effectiveness, or guide other project decision-making. Some results, while informative, cannot be tied to specific components of the curriculum. Others may be statistically significant without informing instructional decisions. Still others may have high specific utility but may be provided too late unless priorities have been watched carefully. And, finally, many results may have multiple utilities, guiding revision efforts and informing the consumer as well.

Feedback Mechanisms

An assumption commonly made is that if evaluation information is available it will be obtained and put to use. This is not necessarily the case; many projects, agencies, and administrators still do not attend to evaluation data. The development staff must have a commitment to the evaluation design—and must have accepted the legitimacy, credibility, and utility of the forthcoming data. (Protective distortion of evaluation misses the point that the question is, "What is the problem?", not "Who is at fault?").

An obligation of the evaluators is to provide and maintain useful feedback mechanisms that include interpretations and recommendations to the developers, support source, and other audiences. They, in turn, are obligated to explore and interpret the results from their own perspectives. Varying conclusions must then be reconciled and documented.

In transmitting evaluation information the evaluators must be cognizant of the audiences. A highly technical report may be necessary—or may be only self-serving. Summaries of data in *any* report must be communicated clearly and nontechnically in order to be used most effectively.

Decision criteria are important in reconciling evaluators' and developers' views of the evaluation. Both should prepare criteria in advance, for each aspect of the evaluation plan. Particular findings will then be compared with the agreed-upon standards to guide rejection, revision, and redevelopment. The critical standards may be levels of student performance, number of children achieving the specific behavioral objectives, the occurrence of particular events, or others.

The curriculum, its product, and its future contribution to the schools can be tested meaningfully and reliably only by this kind of careful and systematic design and use of evaluation.

Bibliography

Bloom, B. S., J. T. Hastings, and **G. F. Madares.** *Handbook on Formative and Summative Evaluation of Student Learning.* McGraw-Hill Book Co., New York, 1971.

Gage, N. L. (Ed.). *Handbook of Research on Teaching.* Rand McNally and Co., Chicago, 1963.

Gallagher, J. J., G. A. Nuthall, and **B. Rosenshine.** *Classroom Observation.* AERA Monograph Series on Curriculum Evaluation. Rand McNally and Co., Chicago, 1970.

Gallagher, J. J., R. Surles, and **A. Hayes.** *Program Planning and Evaluation.* First Chance for Children Monograph Series. Technical Assistance Development System, University of North Carolina, Chapel Hill, N. C., 1973.

Goodstein, H. A. The Role of Research and Evaluation in EMH Curriculum Development—Mathematics for the Handicapped. Paper presented at a symposium of the Annual Convention of the American Educational Research Association, Chicago, April 1974a.

Goodstein, H. A. The Role of Pupil Performance Data in Formative Evaluation: Criterion-Referenced Assessment—the Panacea? Paper presented at the Fifth Annual Convocation of the Northeast Educational Research Association, November 1974b.

Gronlund, N. E. (Ed.). *Readings in Measurement & Evaluation.* The Macmillan Company, New York, 1968.

Gronlund, N. E. *Stating Behavioral Objectives for Classroom Instruction.* The Macmillan Company, New York, 1970.

Gronlund, N. E. *Measurement and Evaluation in Teaching.* The Macmillan Company, New York, 1971.

House, E. R. (Ed.). *School Evaluation: The Politics and the Process.* McCutchan Publishing Corp., Berkeley, Calif., 1973.

Lehrer, B. The Role of Research and Evaluation in EMH Curriculum Development—A Social Learning Curriculum for the Educable Mentally Handicapped. Paper presented at a symposium of the Annual Convention of the American Educational Research Association, Chicago, April 1974.

Mager, R. F. *Goal Analysis.* Fearon Publishers/Lear Siegler, Inc., Belmont, Calif., 1972.

March, J. G. Model Bias in Social Action. *Review of Educational Research* **42**(4), Fall 1972, pp. 413-29.

NS/SSE (National Study of Secondary School Evaluation). *Evaluative Criteria.* NS/SSE, Washington, D. C., 1960.

Overly, N. V. (Ed.). *The Unstudied Curriculum: Its Impact on Children.* Association for Supervision and Curriculum Development, National Education Association, Washington, D.C. 1970.

Rippey, R. M. (Ed.). *Studies in Transactional Evaluation.* McCutchan Publishing Corp., Berkeley, Calif. 1973.

Roberson, E. W. (Ed.). *Educational Accountability Through Evaluation.* Educational Technology Publications, Englewood Cliffs, New Jersey, 1971.

Robinson, C. E., and **J. M. Steele.** The Role of Research and Evaluation in EMH Curriculum Development—Life Sciences for the Educable Mentally Handicapped. Paper presented at a symposium of the Annual Convention of the American Educational Research Association, Chicago, April 1974.

Rosenshine, B. Evaluation of Instruction. *Review of Educational Research: Educational Evaluation* **40**(2), April 1970, pp. 181-205.

Sanders, J. R., and **D. J. Cunningham,** A Structure for Formative Evaluation in Product Development. *Review of Educational Research* **43**(2), Spring 1973, pp. 217-236.

Sidman, M. *Tactics of Scientific Research: Evaluating Experimental Data in Psychology.* Basic Books, Inc., New York, 1960.

Sjogren, D. D. Measurement Techniques in Evaluation. *Review of Educational Research: Educational Evaluation* **40**(2), April 1970, pp. 301-20.

Stake, R. E. and **T. Denny.** Needed Concepts and Techniques for Utilizing More Fully the Potential of Evaluation. *Educational Evaluation: New Roles, New Means.* 68th Yearbook of the National Society for the Study of Education, Part II. University of Chicago Press, Chicago, 1969.

Stake, R. E. Objectives, Priorities, and Other Judgment Data. *Review of Educational Research: Educational Evaluation* **40**(2), April 1970, pp. 181-205.

Steele, J. M. Formative Evaluation in Curriculum Development. *BSCS Newsletter 46*. Biological Sciences Curriculum Study, Boulder, Colo., 1972.

Steele, J. M. *Assessing Student Abilities and Performance: Year 1*. Formative Evaluation Report 2 for ME AND MY ENVIRONMENT. Project No. 1520-75, Grant No. OEG-0-9-152075-3720(032), Bureau of Education for the Handicapped, U.S. Office of Education, Department of Health, Education and Welfare. Biological Sciences Curriculum Study, Boulder, Colo., December 1973.

Steele, J. M. *Design and Revision, Data Collection and Portrayal*. Formative Evaluation Report 3 for ME AND MY ENVIRONMENT. Project No. 1520-75, Grant No. OEG-0-9-152075-3720(032), Bureau of Education for the Handicapped, U.S. Office of Education, Department of Health, Education and Welfare. Biological Sciences Curriculum Study, Boulder, Colo., September 1974.

Steele, S. M. *Contemporary Approaches to Program Evaluation: Implications for Evaluating Programs for Disadvantaged Adults*. (See Appendix A, Condensed Contemporary Program Evaluation Approaches.) Educational Resources Division, Capitol Publications, Inc., Washington, D. C., 1973.

Stufflebeam, D. Evaluation As Enlightenment for Decision-Making. The Evaluation Center, Ohio State University, Columbus, Ohio, 1967 (mimeo).

Stufflebeam, D., *et al. Educational Evaluation and Decision-making*. F. E. Peacock Publishers, Inc., Itasca, Ill., 1971.

Travers, R. M. W. (Ed.). *Second Handbook of Research on Teaching*. Rand McNally and Co., Chicago, 1973.

Tyler, R. W. General Statement on Evaluation. *Journal of Educational Research*, March 1942, pp. 492-502.

Tyler, R. W., R. Gagne, and **M. Scriven,** in R. E. Stake (Ed.), *Perspectives of Curriculum Evaluation*. AERA Monograph Series on Curriculum Evaluation. Rand McNally and Co., Chicago, 1967.

Vogel, P. The Role of Research and Evaluation in EMH Curriculum Development—Health, Physical Education, and Recreation for Retarded Children. Paper presented at a symposium of the Annual Convention of the American Educational Research Association, Chicago, April 1974.

Worthen, B. R., and **J. R. Sanders** (Eds.). *Educational Evaluation: Theory and Practice*. C. A. Jones Publishing Co., Worthington, Ohio, 1973.

CHAPTER **SIX**

Dissemination and Implementation

The curriculum developer will see his role as one of introducing worthwhile change—the role of schools, as accepting it.

The schools may see the curriculum developer's role as one of interested outside intervention—their own, as evaluating it.

The implication is that the curriculum will ultimately be evaluated twice—the second time in the educational marketplace (see Feasibility Review, Chapter 3). For while the existence of an educational problem may be recognized by all, the particular solution adopted in applying research on this problem to one curriculum may not be accepted quickly as the best approach. Indeed, some schools may not hold it to be a solution at all.

Any application of research to curricular change must then entail effective dissemination, to inform the market and supply it with the curriculum's product, and in some cases even to *create* a market.

Predictability, in Teacher Acceptance of a Curriculum

Given options in curricula and products (and options almost always exist) teachers are likely to show voting preferences for programs with the greatest combination of elements of high promise/low risk as illustrated on the next page under the headings "Product Effectiveness" and "Accessibility Criteria."

Implementation and dissemination planning will overlap in considering problems of a curriculum's future against these features and criteria, for rarely will an innovative program satisfy all the listed conditions. Instead it is more likely that

a. teacher training will be required (Accessibility Point **1**; see Chapter 4)
b. some revision in classroom strategies will be necessary (Accessibility Point **3**), and
c. at least *some* initial stress in teaching life-style will therefore be introduced (Accessibility Point **5**)

Product Effectiveness (High Promise)	Accessibility Criteria (Low Risk)
1. Attractive packaging	1. Least threat to teacher training and capabilities (or, alternatively, an attractive *training* package)
2. Abundance of new, easy-to-use teaching and learning ideas	2. Fewest imposed "outside" values on teaching
3. Obvious relationship to educational needs	3. Least revision of classroom strategies
4. High interest value for a. teacher b. students	4. Least requirement in before-class preparation
5. High apparent validity or—in a complicated or unusual program—accountability procedures (implied guarantee of results)	5. Least overall stress in teaching life-style
	6. Least cost in proportion to implied efficiency of results
In summary, a program that will best help the students learn	**In summary, a program that is accessible to the teacher**

For *all six* accessibility criteria to be heavily involved places dependence for the program's ultimate success either on widespread rejection of curricula in use in the schools, or implementation procedures that, combined with dissemination, will involve pre-service and in-service courses, institutes, and workshops for some years and require continuing heavy implementation funding or grants.

Because there is no other known path to a broad market for extremely innovative programs (as reflected by difficulties and even failures of some major curriculum projects of the past two decades in the United States), a project's developers should make a careful study of the high promise/low risk factors itemized in the table, the underlying reasons for their inclusion there, and the offsetting implementation procedures that may prove necessary to win acceptance and use of a new curriculum.

Roughly correlated with some of the underlying reasons for teachers making decisions as they do are a few processes that appear to *condition* decision-making. These processes are related to the points in the foregoing table as empirical shortcuts that help determine the minimum number of favorable factors on which a decision to use a new program may be made:

1. Heavy, continued publicity
   The impact eventually neutralizes certain concerns, but the cost is normally prohibitive for the educational market.
2. Lesser, but effective, repetition of publicity *provided that the first message or experience in the chain evokes a neutral-to-favorable response* (Havelock, 1972)
   More closely "budgeted" publicity does not work if the first message or experience is unfavorable.* (Positive image-building from the project's beginning involves the images staff members give to the educational community, as well as the image of the program itself.)

*A cross-reference is given to the disagreement that exists (page 46) over widespread dissemination of early formative evaluation. Programs often meet limited success in their first field tests, and the formative evaluation (until revisions have been made and field-tested) may appear negative to some who read it.

3. Endorsement by
   a. well known authorities in the field, and
   b. teachers or other educators who are personal acquaintances, or who are "local" (from the same or a nearby school district, or a nearby college or university)

A fourth process affecting decision-making has already been noted—rejection or growing frustration with curricula currently in use.

Against this background of factors and processes attending predictability of a program's successful dissemination and implementation, stages and problems in dissemination can be taken up in approximate chronological sequence.

Dissemination During Developmental Stages

Conceivably, the first public relations effort will be made in educational journals in the sphere of influence of the curriculum, announcing

- the establishment of a new curriculum development project
- its nature
- its staff
- its headquarters
- its service mission to teachers and schools

and inviting interested inquiries.

Usually journal announcements are in the form of submitted articles. The novelty and creativity possible in drawing up and submitting a paid educational advertisement is an alternate approach which has been little explored.

Each subsequent public announcement the project makes, and each step it takes, will result in a first message for someone. Half of the dissemination effort is therefore its spirit, measured by the success with which the curriculum staff can keep in mind that a developmental project is not an end but a means to an end. The other half of the effort is creating or enlisting the physical means to accomplish the dissemination. How is the information to reach the greatest possible part of the educational marketplace? Possibilities include:

1. *The initial announcement, inviting inquiries* (as mentioned). The project should build a mailing list beginning with
   a. names and addresses of those who write for further information
   b. names and addresses of those listed by educational directories as being concerned with the target population, the area of the curriculum, or special education in general
2. *An informational brochure.* If attractively designed and printed, a brochure should be kept in stock as the mailing list expands. (The mailing list should also be kept corrected as it grows larger, and eventually it should be passed on to the publisher or distributor who will be responsible for distributing the curriculum's product.)
3. *A newsletter.* As a continuing news service, a newsletter is recommended for periodic publication and distribution to everyone on the mailing list. It will also lead to enlargement of the mailing list as copies are passed from hand to hand and the readers of borrowed copies subsequently write to be

placed on the mailing list, too. Two requirements underly this kind of newsletter service:

a. the creativity—and funds—to publish attractive newsletters
b. the maintenance of a regular schedule of publication

Readers will come to depend on the arrival of each newsletter on schedule. Responsibility for its content and time of publication is not a job for the spare time of a secretary who has access to an office copier machine.

4. *Visitor service.* Guided tours of the project's offices and facilities are time-consuming, as are visits to nearby pilot or field-test classrooms, but visitors should always be welcomed and at least the office tours should be conducted. Miscellaneous expenses in the project's budget should be planned to cover the costs.
5. *Convention service.* Time and travel expenses should be budgeted to permit staff members to attend national and regional educational conventions of importance to the project and its dissemination effort. The staff should request time on the conventions' programs. An informational exhibit may also be arranged in the area set aside for display of teaching and learning materials. Eventually, as the implementation effort is organized, in-service workshops (see below) should be offered at conventions.
6. *Workshops.* The need for training (and workshops as one device) was the subject of Chapter 4. Often an informational service and an introduction to teacher training can be combined as part of a convention program. Or an in-depth workshop can be offered by arrangement with interested teachers who plan to attend a given convention. As with other dissemination and implementation services, costs of staff participation, including time, travel expenses, and supplies, must be foreseen in the project's budget. Intensification of the workshop effort should also be foreseen, to include:

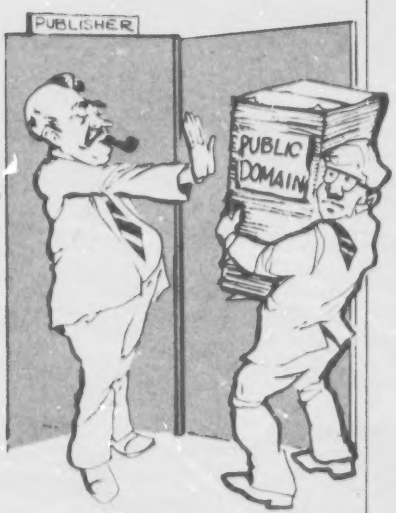
   a. other regional in-service workshops
   b. invitational workshops at the project's headquarters
   c. workshops or in-service courses at colleges and universities
   d. possibly both summer institutes and academic-year institutes
   e. eventual transfer of the workshop function to a commercial publisher

   Provisions already exist for certain implementation grants under Points **c** and **d**, and many colleges and universities have applied for and obtained grants to offer such programs each year for the last decade or more. Depending on the subject area of the curriculum, arrangements may be made with individual colleges to include in their grant proposals a training institute for the project's curriculum and materials.
7. *Overprintings or overproduction of the prototype product and its training materials.* Though costs cannot be ignored, some provision should be made for a quantity of prototype (and later, revised) materials well beyond the needs of pilot or field-test classes. Workshops will require them, and requests may begin to accumulate from a growing number of schools to participate in the project's work. Many of the schools will be willing to defray the costs on the understanding that their request could not have been foreseen and is not covered in the project's budget. The option actually left open to the project, however, is to predict these occurrences and obtain approval from its funding source to borrow against later developmental funds for overproduction, until the costs can be repaid by the added participating schools.
8. *Overprinting of evaluation reports and working papers.* One of the authors' projects, Project MORE (pages 15-17 and 88), has announced at large the availability of working papers for those interested in data-based questions. Orders have been filled on request. Another of these projects, ME AND MY

ENVIRONMENT (pages 26-27 and 87), publishes periodic evaluation reports and distributes them selectively according to the content of each report. (Its first evaluation report was an absorbing account of the selection of field-test sites, the children and teachers who would participate, and the known "qualifications" of the students for being placed in special education classes for the mentally retarded. The report was printed and distributed to 2500 people, most of them instructors of the retarded. But the second evaluation report, which analyzed first-year field testing and included critical evaluation of the instruction as well as of the materials, was prepared only for 500 people, most of them administrators and others in the educational community who bore responsibility for a school's overall programs. The latter audience also included staff personnel of other projects for the mentally retarded—but only a limited number of the "generally" interested instructors on the mailing list. The differences in selection of audiences for the two reports are explained partly by page 59, Point **2** and footnote; the continuing influence of messages even after the first one which a teacher receives about a new curriculum must be taken into account in the dissemination effort. In this instance the second report was instrumental to revision but not to the curriculum's final product.)

9. *Arrangements or preliminary explorations with national distributors.* Rarely are preliminary or experimental editions of a program marketed commercially (although such arrangements are the goal for the revised, final product). Exceptions occur, however. For example, Project MORE has tested not only its programs (with trainable retarded individuals), but commercial distribution arrangements as well. The market is known as "thin," in that relatively few children in any community are the target of the distributor's efforts. Can a "thin" market support its promotional costs? Project MORE has been finding this out in an arrangement made with a commercial distributor to market the experimental (developmental) edition of the materials. (On the basis of what has been learned, marketing arrangements for the commercial edition of the materials have also been made.)

All these guidelines for dissemination have implied that a project should have a diversified staff and a considerable budget. Yet these are not the facts for most projects. However small the scale on which a project proposes to operate, *effective dissemination is still its responsibility*, and whatever means it can hope to use are all the more important and should be exploited. Local and state governments and other agencies should be contacted for dissemination support; federal agencies and out-of-state foundations are possibilities, too. Unless a curriculum is tied only to a local or regional need, its dissemination will be one of its greatest concerns.



Copyrights, Royalties, and Their Effect on Dissemination Procedures

The first publication of a curriculum project—whether an informational brochure, newsletter, or part of the prototype product—confronts it with copyright problems and procedures. The failure to obtain a copyright may be irreparable. Hence, the project's staff must become acquainted with copyright procedures very early.

The Copyright Office of the Library of Congress (Washington, D. C.) administers copyright procedures and registers new copyrights. General information can be obtained by mail; protection is extended for 28 years and is renewable. Procedures must be followed carefully, but once they are understood they are

simple. No advance notice to the Copyright Office is necessary; instead the first step is the inclusion of a proper copyright statement in the printing of a book, pamphlet, film cassette label, worksheet, or other item. For example:

© 1975 by St. Vrain County School District (Colorado).

Typically the notice appears on the reverse side of the title page of a book or pamphlet, at the bottom of a data sheet or film cassette label, on the cover of a box for an educational game, and so on. Often, to clarify the meaning of the international copyright symbol, ©, the notice is printed with the word *copyright* ahead of the symbol:

Copyright © 1975 by the Curriculum Research and Development Center in Mental Retardation, Yeshiva University, New York.

In either event, the three necessary elements of the notice are:

1. the copyright imprimatur—
   a. ©, or
   b. Copyright ©
2. the year of first use—
   a. 1975, or
   b. 1976, or another date
3. the name of the copyright owner or proprietor—
   a. an individual
      1) without address added ...Edward L. Meyen
      2) with address ...William Reid, Gainesville, Florida
      3) with address and invitation for inquiries on rights and permissions ...Robert Erdman. All rights reserved. For information on rights and permissions, direct inquiries to the copyright owner at [home address, city, state, ZIP]
   b. an organization or institution
      1) [*with or without address, etc.,*
      2) *as for individuals—*
      3) *see* **3a**]

Only the formality of registering the copyright remains. Two copies of each item (with their copyright notices), a copyright application (forms are available from the Copyright Office), and the required fees for registry (as explained on the copyright forms) should be forwarded to the Library of Congress at the time of publication.

Variations on this procedure are possible in special circumstances. For example, in some instances a copyright notice may be printed but the application for its registry may be withheld or postponed for up to a year.

What constitutes copyrightable material is a complex question that does not involve whether a book or pamphlet may contain some material from other, copyrighted sources. In the latter instance, written permission for the included material should be obtained from its copyright owner, proper credit should be given, and new copyright application made for the entire new volume and its contents. Correspondence giving permissions should be carefully filed and kept in case a question later arises over use of some of the included material.

For all of a project's developmental materials, copyright or patent applications or both should be made. Notices of copyright should appear on everything produced—even data forms. The alternative is publication without copyright protection (called "in the public domain") and no later application for copyright can recover the rights surrendered to the public at large. Materials so published may be

used and reproduced by anyone in any way, including revisions toward purposes not sanctioned by the original authors.

Some support sources or funding organizations do require a project using their funds to publish in the public domain. A developmental project should avoid this circumstance, if possible, by going to another funding source for support. The curriculum's product will not be promoted and marketed by a commercial educational publisher or distributor if copyright protection has not been obtained.

A more common circumstance is for a funding organization to put only certain restrictions on the copyright that is to be registered. For example, the copyright notice required of the BSCS project, ME AND MY ENVIRONMENT (see pages 26-27 and 87), under the conditions of its grant from the Bureau of Education for the Handicapped, U. S. Office of Education, reads as follows:

> Copyright © 1975 by the Biological Sciences Curriculum Study.
>
> All rights reserved. No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system, without permission in writing. For permissions and other rights under this copyright, please contact the Biological Sciences Curriculum Study, P. O. Box 930, Boulder, Colorado 80302.
>
> Copyright is claimed until January 1985. Thereafter all portions of this work covered by this copyright will be in the public domain.
>
> This work was developed under a grant with the U. S. Office of Education, Department of Health, Education and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of that Agency, and no official endorsement should be inferred.

Copyrighted materials sometimes are distributed free of charge, and sometimes are sold. Royalties are ordinarily paid on copies sold, as in the sale of commercial editions of an educational product. This royalty potential, along with other considerations, raises certain further questions affecting copyright:

1. *Are the allowable or indicated copyright periods sufficient?* An unrestricted copyright of 28 years ordinarily is more than sufficient for an educational product; if not, it may be renewed for another 28 years. Revision of the product starts the copyright procedure anew, through 10, 20, or even 30 editions. But if a project's funding source restricts its copyright to less than five or six years renewable on revision, or to less than 10 years nonrenewable, the minimum safeguards considered practicable by leading private educational industries will not be met. Correspondence should be exchanged with the support source and interested educational publishers to establish a rationale for a copyright provision that will be suitable to both.
2. *Who will hold the copyright proprietorship?* A funded project may be dependent on a school district or a university or other institution for the administration of its funds. If it is not itself a separate and financially accountable organization, but has been organized only for the purpose of its developmental work, then a support source will require that it be attached to a financially accountable organization for the administration of all its fiscal affairs. In this event the funds are turned over to the accountable organization as the *grantee*. The copyright proprietorship may also be assigned to the grantee.
3. *What are the implications attached to holding the copyright proprietorship?* If neither the support source nor the project, but a nonparticipating organization appointed as the grantee, holds the copyright proprietorship, the implications are immediately complex and even dangerous, as indicated by the following possible courses of events:

a. The project may become dissatisfied with its fiscal "parent" organization and seek to be attached to another. Legally it retains this right. But it cannot make the move if the original grantee will not release the copyright proprietorship.

b. The grantee may assume that it owns the royalties that are paid to it as the copyright proprietor, when commercial editions have been prepared and are sold.

Though many other complications may arise, these are the two that must be foreseen and clarified in advance. A contract between the support source and the grantee should stipulate that *ownership* does not reside with the copyright *proprietor* if it is an institution that is merely administering the funding for the project; further, that royalties, if any, do not reside with the copyright proprietor but with the support source (or in some stated division between it and the project itself, which may be charged with applying royalties against the cost and responsibility for future revisions).

Conflicts over these conditions have occasionally led to court hearings and have also prompted hearings in the offices of federal funding sources and in Congress (*Federal Register*, September 19, 1973).

4. *What arrangements should be made for royalty payments and their distribution?* Point **3** has alluded to this question to the extent that a nonparticipating grantee which holds the copyright proprietorship should be informed at the outset (by contract) that it does not own a project's materials or the royalties that may accrue from their sale. The sale of educational materials by commercial publishers and distributors may produce royalties measured in thousands, tens of thousands, or hundreds of thousands of dollars over a period of years. If a program is complex to maintain and administer, requires frequent revision, or must be continually supported by new in-service teacher training, the project staff may be asked by the support source to maintain its headquarters and organization even after completion of the final product in its first commercial edition, so that it can provide service functions to the program during the years of heavy implementation requirements. Royalties may be returned to the project for this purpose. Or, the rate at which royalties are paid by the commercial distributor may be reduced, if the distributor is to maintain heavy service functions and the project staff itself is to disband (or be reduced to an administrative nucleus). Formerly, most royalties were returned to the support source, or, in the case of federal departments and agencies, to the Treasurer of the United States. Today, however, new curricular programs tend to be innovative in so many ways that royalties are increasingly diverted to service, implementation, and future revision functions.

   For a project that has originated in and is supported by a local school district, the disposition of royalties can be arranged locally.

Dissemination and Implementation —Commercial Channels

Some of the preceding considerations affecting copyright also affect the selection of a commercial distributor for a project's final product:

First, as earlier noted, a commercial publisher or distributor will not be interested in *any* arrangement unless a copyright is included.

Second, the publisher or distributor would prefer to be the copyright proprietor, but this is not always possible.

Precedent exists for either the project or the grantee to hold the copyright, with adequate contractual arrangements reserving other rights to the publisher or distributor.

The project's own dissemination activities will be far along when these questions involving the commercial promotion and distribution of the curriculum's product begin to involve the interests and expertise of the distributor. *Who* the distributor will be may not yet have been settled; a number of potential commercial "partners" for the project should be on its mailing list and should be revisited periodically for discussions of their continuing interest.

Probably the project will have scheduled the time and process for transfer of production, distribution, and (often) implementation functions to a commercial organization. If the project's support source has reserved a role in the decision, several questions are raised:

1. When will the support source conduct a review and declare whether it considers the revised product satisfactory and ready for commercial production? Often this step is a condition of a developmental contract, and the question is, "Has the contract been fulfilled?"
2. Will the support source specify the bidding conditions for a commercial contract?
3. Will the support source *award* the contract?

Question 3 raises still another question: who is in the best position to know which commercial distributors may do the best job in serving a particular curriculum's dissemination (and possibly implementation) functions? Probably the project staff has a keener sense of the distinctions among distributors than its support source has. The staff's recommendations should be sought and weighed heavily in the award of a commercial contract.

When the support source is a federal agency it may specify that the Publisher's Alert Service (PAS) of the National Institute of Education is to distribute a news bulletin on the availability of the project's materials for commercial production and sale. The project staff will be asked for information to be included in this alert, and will have no control over which distributors may ask for an invitation to bid.

PAS attempts to contact *all* interested publishers, producers, and distributors, even as the project or its support source is preparing the specifications (or drawing up the conditions) to be met in a commercial contract. If PAS is not involved, usually the project, if it has a federal support source, must invite at least three competitive bids. The U. S. Office of Education policy, for one example, is to use PAS and widely distributed requests for proposals for all products that may have a mass market, but to follow a more selective procedure, involving at least three invitations to bid, for products that may have a "thin" market (see page 62). In practice, a new market, whether potentially "thin" or not, may be considered in this category because of unusual expenditures of time, money, and effort necessary to promote an innovative product and train teachers in its proper use. (Put another way, the market may have to be "created.")

Mass and "thin" market considerations and others (for example, an unusual array of materials included in the product) should be part of a project's exchange of information with its support source regarding the award of a commercial contract. Indeed, any and all conditions affecting selection of a commercial producer or distributor should be specified—for example,

1. that the distributor should become qualified to conduct training workshops and should conduct them on a regular and continuing basis after the product leaves the curriculum project's hands
2. that the distributor will provide national promotion and publicity (including exhibits at national educational conventions) and a continuing national sales force representation for the product

3. that the distributor will keep the project informed of all local school program-adoption situations that go beyond its normal role in **1** and **2** and that should involve the project staff in a consulting capacity to these schools
4. that the distributor will supply specified feedback and market data if required for project-reporting purposes
5. that the distributor will report regularly (probably semi-annually) the sales of the curriculum's product and pay the specified royalties with each report
6. that the distributor will keep the curriculum's product in production and in stock for a specified number of years or surrender its distributorship and return all rights to the project or to its support source
7. that the distributor will not also represent another product similar in character to the project's product and injurious to its interests (a careful distinction is necessary in this specification, between sound pedagogical and arbitrary reasons)

The publisher's or distributor's reputation, experience in the area of the curriculum, efficiency and thoroughness, and other attributes must be considered; and perhaps even the question of whether one or more distributors should be involved will be a consideration for a product with diversified or parallel components.

The project itself can disseminate information and build a successful instructor-following to an advanced point in its work, but its image and the even greater eventual success of the curriculum and its product—perhaps after the project staff is no longer together or has been reduced to "service" proportions to attend consulting functions and future revisions—will be largely in the hands of its selected distributor. This circumstance focuses all the necessary attention of the curriculum staff on the proportions of the problem of finding the best qualified commercial partner.

Bibliography

Bogsch, A. *The Law of Copyright Under the Universal Convention*, Third Edition. R. R. Bowker Company, New York, 1969.

Cartwright, C. J., B. M. McLean, and **J. R. Lent.** Bridging the Consumer-Research Gap: Systematic Procedures to Obtain Commercial Dissemination of Educational Materials. Working Paper 301, Parsons Research Center (University of Kansas), Parson, Kansas, August 1973.

Comptroller General of the United States. *Report to the Congress: Educational Laboratory and Research and Development Center Programs Need to be Strengthened.* National Institute of Education, Department of Health, Education and Welfare. U. S. General Accounting Office, Washington, D. C. 1973.

Department of Health, Education and Welfare. National Institute of Education, Publisher's Alert Service (PAS). Forms GPO 879-096 and GPO 869-066. U. S. Government Printing Office, Washington, D. C.

Department of Health, Education and Welfare. *U. S. Office of Education Copyright Guidelines.* U. S. Government Printing Office, Washington, D. C., 1972.

Department of Health, Education and Welfare. *U. S. Office of Education Copyright Program Information.* U. S. Government Printing Office, Washington, D. C., 1972.

Files, D. H., and **A. A. Attwell.** Types of Inservice Meetings Preferred by Teachers of the Trainable Mentally Retarded. *Exceptional Children* **33**(3), 1966, pp. 180-84.

Havelock, R.G. *et al. Planning for Innovation Through Dissemination and Utilization of Knowledge.* Institute for Social Research, University of Michigan, Ann Arbor, Michigan, 1972.

Jordan, J. Current and Significant: the Curriculum Research and Development Center in Mental Retardation. *Education and Training of the Mentally Retarded* **6**(2), 1971, pp. 85-87.

Lawler, M. R. (Ed.). *Strategies for Planned Curricular Innovation.* Teachers College Press, Columbia University, New York, 1970.

Lukac, George J. (Ed.) *Copyright: the Librarian and the Law,* Rutgers University Press, New Brunswick, New Jersey, 1972 (paperback).

National Archives and Records Service, General Services Administration. *Federal Register,* September 19, 1973. U. S. Government Printing Office, Washington, D. C.

Pilpel, H. F., and **M. D. Goldberg.** *A Copyright Guide.* Fourth Edition. R. R. Bowker Company, New York, 1969.

Schramm, W. Educational Technology and the ERIC Clearinghouse. *Educational Technology:* Special Issue, January 15, 1968.

Smith, L. M., and **P. M. Keith.** *Anatomy of Educational Innovation.* John Wiley & Sons, New York, 1969.

Taba, H. Techniques of Inservice Training. *Social Education* **24**, 1965, pp. 464-76.

CHAPTER **SEVEN**

Finance

Fiscal matters may seem arcane and peripheral to a developmental mission. Their separation from the creative efforts of a project appears reasonable to many curriculum specialists. Indeed, often a small project is only a temporary extension of their responsibilities; longer-range work may have brought them together and organized the management and fiscal arrangements for their day-to-day affairs. For them a new project is internal to an already existing organizational structure, and the fiscal picture is more remote than it would be for a new group of people organizing specifically for one developmental task.

- An example of an "internal" project is a part-time curriculum improvement study in a public school district. Subject area coordinators and teachers may undertake the work without change in salary, hours, place of work or other conditions. Existing workloads may be affected very slightly because the district is not working against a deadline; the change will be evolutionary, not revolutionary, and will take place over several years. Except for outside services required, a budget apart from the school district's own operating budget may not be drawn up at all.

- Another example is curriculum research and development as an ongoing activity of teacher-training and educational research departments in a university. It is part of the basic mission and may not involve new staff arrangements or working facilities, though it may involve step-funding if the university can match particular research steps or developmental undertakings to particular funding sources' primary interests.

In these examples the fiscal patterns are either well-established, or the problems are familiar in anticipation, so that the topics in this chapter are rarely new or separate considerations for the developmental staff. Nevertheless the chapter can be a useful reminder that efficient fiscal management, while not necessarily visible, must be worked out and carried on by someone somewhere.

For other projects which are starting up as new organizations or additions to existing ones, the fiscal problems are more obvious and immediate. Everyone will be keenly aware of the need for supporting funds, and at least some will be aware that cooperative and informed management of these funds will contribute to a project's success and, indeed, is essential to it. Directing money toward goals without meeting them otherwise takes too many easy forms, all damaging to the standards of success a project must establish to retain or extend its funding support and staff of personnel.

Effective fiscal management may frequently, and sometimes rightly, be

accused of interfering with the mission of a project, but creative and innovative developers on the project's staff will recognize that their bills must be paid—that they can exercise their talents only in a framework of fiscal responsibility.

Eligibility for Grants—Fiscal Classifications

How and where is the money for curriculum development obtained? On the smallest scale, as pointed out, a local school district may support a project on its own. Or, it may support part of the project's cost and apply to foundations, private industry, or state or federal agencies for the balance. It may even apply for *all* the necessary support. On a larger scale a curriculum development project, or a legally incorporated entity (university, research institute, educational society, etc.) acting on the project's behalf, may apply for and receive grants from private or governmental sources. Both profit-making and nonprofit institutions may apply for and be considered for grants, but eligibility for an educational grant usually depends on a project being free of profit-making or private-interest influences (it may need to be incorporated separately on nonprofit, tax-exempt status, if it otherwise could be associated with industrial or private interests).

Some foundations, such as the Ford Foundation, will fund *only* nonprofit, tax-exempt organizations—those with 501(c)(3)* status from the Internal Revenue Service. In fact the guidelines for obtaining outside fiscal support all tend to converge toward this requirement, making it useful as an assumption in two working definitions of fiscal status for a project:

1. *Fiscally independent curriculum development project*—any project that is incorporated and accountable as a nonprofit, 501(c)(3) organization (it must have a treasurer and should also have a comptroller and other business office personnel with demonstrated ability for fiscal administration)
2. *Fiscally dependent curriculum project*—any project that does not meet the definition under Number **1**

A project may take steps to change its status from **2** to **1** (the Biological Sciences Curriculum Study, of which ME AND MY ENVIRONMENT is a part, is an example), but until or unless it does so, it must contract for a grant through a university, institute, educational society, corporation, or other legal entity. (Projects MATH, MORE, I CAN, and the SOCIAL LEARNING CURRICULUM are examples of projects of this type.)

*See that section in the Internal Revenue Code. Section 509 (a) is also helpful. Public school districts, universities, and many educational societies and museums ordinarily meet this test of the Internal Revenue Code.

Advantages and Disadvantages of Independent Fiscal Status

Both types of fiscal status have advantages and disadvantages. Some of the major advantages of independence are:

1. management exclusively oriented to the project mission and with no obligations outside it
2. immediate fiscal decisions

3. no conflicting administrative directives (from project management and from fiscal management)
4. localization of all tasks within the project staff
5. no disagreement over distribution of a grant's indirect support monies (for administrative overhead costs)

Some disadvantages of independence for a project are:

1. responsibility for its own housing and office-service facilities
2. proliferation of staff appointments and functions (treasurer, comptroller, and other business office personnel—and perhaps other categories of employees as well)
3. small cash reserves (often a grant's monies are delayed for months after the grant's award, raising a question of how salaries and expenditures are to be met temporarily)
4. provision of ancillary services (reference library, computer, and so on) that would be made available to a dependent project by its fiscal parent institute (if a university or related institute)

In practice it is not uncommon for a university to extend the services included under Number **4** to nonprofit, tax-exempt organizations in its vicinity. Otherwise, these services must be contracted for.

Advantages and Disadvantages of Dependent Fiscal Status

Among the advantages of a fiscal affiliation with a parent organization—especially if it is a university or research institute—are

1. assistance in obtaining office space, equipment, and services
2. fiscal support until the monies to be received under a grant have arrived
3. fiscal services as a part of the larger organization
4. advice and legal assistance when necessary
5. library, computer, and numerous other services
6. and in the case of a university, the opportunity to begin the project's dissemination function (in that qualified project staff members may obtain adjunct appointments to the faculty and be permitted to organize and teach courses related to their curriculum development mission)

Some of the disadvantages are:

1. delays in fiscal decisions and reports
2. "other-goal" orientation of the fiscal parent institution (to its own primary purposes)
3. bureaucratic procedures inherent in the larger institution's manner of organization and operation (a state university follows certain procedures as mandated by its state legislature; a private university as mandated by its Board of Trustees—and so on)
4. duplication of, or conflict over, tasks that the project elects to perform for control and efficiency but that the fiscal parent may view as within its realm

5. the rate charged by the parent institution for its services (indirect support or overhead rates vary for different institutions, from 10 percent to as much as 90 percent in a surcharge based on, but calculated beyond, a project's direct support funds)
6. disagreement over distribution of the indirect support monies in Number 5 (the project retains most management functions and incurs their costs, but the parent institution may retain all the indirect support monies received under a grant, considering them "rightful" reimbursement for its own services)
7. difficulties over copyright proprietorship for the project's product (see Chapter 6)
8. possible loss of royalties on the commercial sale of the project's product, if the parent institution becomes the copyright proprietor (see Chapter 6)

Despite the long list of disadvantages (which raise further questions), an arrangement that is satisfactory can be worked out if a project that will be dependent in fiscal status "shops around" wisely for its fiscal parent organization or institution. Indeed, dependent projects are more the rule than the exception, and the problems related to them are therefore more generally applicable than are the problems of fiscally independent projects.

Making an arrangement of the project's choice, with a university, educational society, institute, or other organization, is usually not too difficult because

a. a worthwhile curriculum development project reflects credit on the parent institution, and
b. the parent institution will be paid for its services (nearly all grants have indirect support allowances)

The project director (or the developer proposing the project) can select and approach several institutions about their interest in considering a role of fiscal parent. Each institution may ask to make its own study of the planned project, and if it accepts the invitation, will offer a letter or affidavit to the foundation or state or federal agency from which funds are being sought. Amendments to the proposed budget, for the institution's overhead expenses (indirect costs) will be suggested, and a statement of services the fiscal parent is prepared to offer the project may be made.

Then a number of critical questions must be pursued, before an arrangement is actually entered:

1. Does each prospective parent organization propose (or agree) to leave policy functions to the project? (They should remain with the project and its own Advisory Committee [see page 23].)
2. What indirect cost rate does each institution charge? (A funding agency will not favor spending almost as much money for administrative support as for the project's work.)
3. What services and functions are included in each institution's calculation of its indirect or overhead costs? (The project may not require all these services or functions. For those it performs on its own, will the parent institution share overhead reimbursement?)
4. Does each institution view the project's work and product as the project's own? (A parent institution's assumption of rights or ownership along with copyright proprietorship may be erroneous but not later correctable [see Chapter 6].)

An alternative to a high overhead rate, or to paying for services or functions the project will not require, is line-iteming in the proposed budget for what may be subsumed under overhead.

Once several candidates for the fiscal affiliation have been approached, the range of differences among them should be examined closely. If all are universities, a good idea is to investigate at least one other type of organization before making a final decision. A nonprofit national educational or academic association may have many fewer restrictive practices than the universities.

Among universities, private universities usually have more flexibility than state universities. The latter are increasingly under state legislative controls, and some of the state's priorities or objectives may conflict with the project's national scope and objectives.

As noted earlier, many dependent projects are limited to departmental staff members of a parent organization; hence, these are internal projects and will adhere to fiscal policies of their respective departments. Copyright proprietorship and royalties may or may not be separately arranged—or be deemed negotiable at all by the parent organization.

The Project's Budget

All anticipated project costs including a reasonable indirect or overhead rate of cost (until the rate is known) can be budgeted on the basis of completing in detail the prospective plans and schedules discussed in sequence in earlier chapters of this book. Then the budget can be reduced to line items.

A sample budget for one year of operation appears on the following page. If the project it represents is completely internal some of the staff salaries may already be accounted for, and the budget can be reduced. Otherwise, all the staff positions shown except the Director's are new and full-time.

In many ways this budget suggests a relatively small project with pilot-teaching on a local basis at no extra cost. Notice that the budget contains no teacher-training or field-test items. It also has no printing costs (but copying costs appear under "office supplies"). Another interpretation of the budget is that it represents first-year operation for a project that will continue for several years; the two program developers will be planning and producing some first-draft materials with help on a free-lance basis in art, photography, and audio needs. The materials will not be printed but only copied. Presumably in the second year the staff may be enlarged (but not necessarily), and teacher-training, field test, and evaluation functions will begin to appear.

All that can be read back from this budget to the project's operations (and under one of two interpretations it is a considerable amount, as indicated in the preceding paragraph) must match the plans and functions that are described in the narrative of the project's proposal accompanying the budget. And so a project's director or initial developer must go through the curriculum planning again in great detail and reduce it to expenditures. For salaries alone, this procedure is very complex: it includes planning time and time that a developer may give to teaching a dissemination course at a nearby university; also time to be given to visitors, to newsletter preparation, to workshops, to educational conventions, etc.; the developer's actual writing and revision time; staff- and teacher-training time; travel time; pilot-class observation time; and on and on for a score of other time expenditures that will extend the developer's time on salary (or determine that more developers will be needed for a shorter time).

For each other member of the staff a similar analysis must be made. Then honoraria and per diem allowances must be set for consultants, for the project's Advisory Committee when it is to meet, for field test instructors when they are to visit for training sessions, and possibly for the field test instructors during their trial teaching of the project's materials. Often these teachers will continue to be

SAMPLE BUDGET FOR ONE YEAR OF PROJECT OPERATIONS

1.	Director 1/10 time spent in administration of this project ($24,000/yr @ 10%)	$ 2,400	
2.	Program developers (2) full time, 1 yr @ $13,000	26,000	
3.	Secretary (1) full time, 1 yr	7,000	
	Total Salaries & Wages		35,400
4.	Employee Benefits @ 10% of Direct Salaries	3,540	
	Total Salaries, Wages, Benefits		$38,940
5.	Honoraria Five Advisory Committee members to meet for 3 days (5 x 3 x $100)	1,500	
6.	Travel, Lodging a) Air fare for Advisory Committee $250+$175+$200+$210+$100	935	
	b) Per diem (5 x 3 x $30)	450	
7.	Office Supplies (including paper and copying services) @ $100/month	1,200	
8.	Art/photography/audio services and products	6,500	
9.	Communications (phones, mail) @$40/month	480	
10.	Office Rent 3 offices = 310 sq ft @ .50/month	1,860	
	Total Other Expenses		12,925
	TOTAL DIRECT COST		$51,865
11.	Indirect Cost (at 10% of Direct Cost, the rate approved for this institution)		5,187
12.	**Total Amount Requested**		$57,052

paid by their schools or colleges, but they will be doing much more work while using the new program—perhaps completing feedback forms daily or weekly and performing other new duties. If they are required to give up part of their regular commitment to their schools or colleges in order to adhere strictly to a schedule of duties set by the project, then the grant may have to include an allowance to pay part or all of their salaries, before their local school boards or their college administrators will approve their participation in the field tests.

When all the input time has been calculated in terms of salaries, employee benefits, vacations, honoraria, per diem allowances, and free-lance contracts, all the other costs must then be budgeted—for office space and other physical facilities, equipment (including a copying machine), supplies, mailing expense, and services (including composition and printing, film development and processing, and tape and film reproduction). Assortments of materials needed along with the product to teach the curriculum for field-testing must be located and purchased; the time and expense for this, too, must be budgeted. Travel expenses and allowances for lodging and meals must be estimated for everyone who will be involved in travel. Depending on the nature of the curriculum effort, many other miscellaneous expenses must be taken into account (office forms, travel vouchers, art and stationery supplies, month-to-month local and long-distance telephone costs,

permissions fees for copyrighted material from other sources, use fees for photographs and other items from commercial sources, exhibit fees for conventions, costs of materials for workshops, and on and on).

Organizing and tabulating the total budget becomes very difficult at best. To the experienced developer, however, it gives back the information put into it; hence a check of it can be made both ways, from the project planning to the budget, and from the budget back to the project planning.

Below and on the next two pages is a skeletal outline for another project budget. The project is assumed to be external (to any existing department of a parent institution); hence, all needed staff positions and activities are listed as new requirements. No amounts of money are entered, and no description of the project is supplied as foreknowledge. Yet a great deal can be inferred from the line items. What functions discussed in this book of guidelines does the project plan to fulfill? What is it *not* planning to do?

Skeletal Outline for a Project Budget (First and Second Years of Operation)

FIRST YEAR

Project office

Director-developer (12 months @ _____)	_____	
Developers, Special Education (two) (12 months @ _____; 12 months @ _____)	_____	
Evaluator (12 months @ _____)	_____	
Research Associate (9 months @ _____)	_____	
Editor (6 months @ _____)	_____	
Artist (6 months @ _____)	_____	
Secretaries (2 x 12 months @ _____)	_____	
Employee Benefits @ 10% of Direct Salaries	_____	
SUBTOTAL, PERSONNEL		_____
Office Supplies and General Expense	_____	
Communications Expense	_____	
Space Rental (2500 sq. ft. @ _____/yr)	_____	
Office Equipment Rental	_____	
Staff Travel (4 @ _____)	_____	
SUBTOTAL, PROJECT OFFICE		_____

Advisory Committee Meeting

Honoraria (4 x 4 [days] @ _____)	_____	
Per diem (4 x 4 [days] @ _____)	_____	
Travel Allowances (1 @ _____; 2 @ _____; 1 @ _____)	_____	
Miscellaneous meeting expenses	_____	
SUBTOTAL, ADVISORY COMMITTEE		_____

Summer Writing Conference
(Six writers, 10 weeks)
Writers' salaries (6 @ _____/wk x 10) _____
Writers' Travel Allowances _____
Temporary Housing Allowance
(6 x _____/wk. x 10) _____
Additional Office Space Rental
(2000 sq. ft. @ _____/wk. x 10) _____
Office Supplies and General Expense _____
Office Equipment Rental _____
SUBTOTAL, WRITING CONFERENCE _____
SUBTOTAL, FIRST YEAR _____
Indirect (Overhead) Costs @ 10% _____
TOTAL, FIRST YEAR _____

SECOND YEAR

Project Office
Director-developer (12 months @ _____) _____
Developers, Special Education (two)
(12 months @ _____;
12 months @ _____) _____
Evaluator (12 months @ _____) _____
Research Associate (12 months @ _____) _____
Editor (12 months @ _____) _____
Artists (three)
(12 months @ _____;
12 months @ _____;
9 months @ _____) _____
Photographer (3 months @ _____) _____
Narrator/Sound Editor
(3 months @ _____) _____
Film Editor (3 months @ _____) _____
Secretaries (Six)
(2 x 12 months @ _____;
4 x 3 months @ _____) _____
Employee Benefits @ 10% of
Direct Salaries _____
SUBTOTAL, PERSONNEL _____

Office Supplies and General Expense _____
Communications Expense _____
Space Rental (4000 sq. ft. @ _____) _____
Office Equipment Rental _____
Staff Travel (4 @ _____) _____
SUBTOTAL, PROJECT OFFICE _____

Advisory Committee Meeting
Honoraria (4 x 4 [days] @ _____) _____
Per diem (4 x 4 [days] @ _____) _____
Travel Allowances
(1 @ _____;
2 @ _____;
1 @ _____) _____
Miscellaneous meeting expenses _____
SUBTOTAL, ADVISORY COMMITTEE _____

Production and Assembly of Experimental Materials		
Composition/typesetting	------	
Printing and Binding	------	
Slide Reproduction	------	
Tape Reproduction	------	
Film Production/Printing	------	
Purchase and Assembly of Materials for Instructional Kit	------	
Teacher-training Package	------	
SUBTOTAL, EXPERIMENTAL MATERIALS		------
Field-test Teacher Training		
Honoraria (20 @ ------)	------	
Per diem (20 @ ------)	------	
Travel Allowances	------	
Miscellaneous equipment/materials rental	------	
Field trip/model teaching expenses	------	
SUBTOTAL, TEACHER TRAINING		------
Staff Evaluation Activities		
Instrument Development and Production	------	
Slide Production Costs	------	
Distribution and Retrieval	------	
Staff Travel	------	
Programmer (50 hrs. @ ------)	------	
Data Processing Assistant (4 months @ ------)	------	
Key Punch and Recording (6 months @ ------)	------	
Computer Time (10 hrs. @ ------)	------	
Printing of Evaluation Report	------	
Evaluation Report Distribution	------	
SUBTOTAL, STAFF EVALUATION		------
SUBTOTAL, SECOND YEAR		------
Indirect Costs @ 10%		------
TOTAL, SECOND YEAR		------
TOTAL AMOUNT REQUESTED, FIRST AND SECOND YEARS		------

The Budget in Review

At some point in the planning and budgeting process it will prove useful to contact other curriculum projects and seek their experience in the preparation of budgets. Not only costs, but *cost effectiveness*, must be reviewed. Curriculum development can become a bottomless sink of time and money unless efforts are directed not only to the completion of the project's tasks but to their discharge by the most direct and least expensive (but effective) way. The tasks should be outlined in as nearly an ideal form as possible and the budget submitted

accordingly. Subsequent scaling may become necessary, for the details of the requested financing are subject to the requirements of the granting agency, which take priority over all other financial considerations. If, for example, the granting agency discovers that the project plans to produce a group of individualized student activities in a large-scale summer writing conference and calculates the cost of producing each activity to be about $500, then the cost may need much more justification than the project has provided, in terms of the product to be produced. The justification may not be possible, and a scaling down or redefining of the writing tasks or the product's complexity may be necessary, to reduce the cost to justifiable boundaries.

Experimental work, field testing, evaluation, and revision are more expensive than production of material whose content, format, and pedagogy have already been proved in extensive classroom usage. Although experimentation always carries with it the possibility of failure, periodic assessments at least allow redirection of energies and expenditures and increase the potential for ultimate production of an effective and innovative product.

Projects that plan a variety of equipment or heavy use of audio-visual materials for their product may find it necessary to modify segments of the curriculum when costs begin to militate against the future adoption of the product by schools.

Overall, the best safeguard against incurring budget cuts is a curriculum proposal that justifies every activity included in the costs. The next-best is considering every possible source of funds—not necessarily all from the same source. Given these considerations, the levels of fiscal accountability for a fiscally-dependent curriculum project must then (and continually) involve

a. the funding agency or agencies (which must control expenditures in accordance with regulations)

b. the grantee (or fiscal parent) organization, which will be accountable to the funding agency or agencies, and

c. the project itself, which will have responsibilities for reporting to the grantee as well as to the funding agency or agencies, on its uses of the monies to achieve the work of the project

No project is primarily interested in a balanced set of books, but in accepting a grant it incurs the fiscal obligations that attend it. Government grants and contracts are subject to audit, and care must be taken to ensure that expenditures are kept parallel to the governing conditions in the grant. If any deviation is foreseen, the project director must ensure that both *program* and *fiscal officers* in the granting agency are consulted and that both approve any change. (Often the program and fiscal personnel are widely separated within the granting agency.) Authorization for a change should be in writing, should be held for possible audit, and even after an audit should be retained for an appropriate time interval after the acceptance of the project's final reports.

Sources of Project Funds

Sources of funding may be

- local (school district)
- state
- federal
- foundation
- private industry
- commercial educational publishers and distributors

Often local resources may be combined with a small grant (or advances against royalties) from a commercial publisher or a producer-distributor of audio-visual materials or program kits, if the publisher or distributor feels that the planned program will have reasonable marketability.

Sources of funds from private industry (oil, steel, automotive, and other) are numerous but frequently ignored.

A clue to state and federal agencies which may be interested in a project's work is the selected target population of students for the curriculum. Retarded students, for example, suggest the Bureau of Education for the Handicapped, U. S. Office of Education—or the National Institute for Education—as well as a number of different agencies at the state level.

Foundation support is more exhaustive to pursue, because of the number of foundations that exist. A Foundation Directory also exists, however (Lewis and Bowers, 1971) and is a useful reference with which to begin.

Need, promise, cost effectiveness, and salesmanship are the project's assets. The requirements of each funding source in documentation, abstracts, applications, affidavits, curriculum vitae, and the descriptive development proposal itself can be made known in an exchange of mail.

Bibliography

Bureau of Education for the Handicapped. *Support for Research and Related Activities for the Education of Handicapped Children.* U. S. Office of Education, Department of Health, Education and Welfare, Washington, D. C.

Department of Health, Education and Welfare. *General Provisions for Negotiated Cost-Reimbursement Type Contract with Nonprofit Institutions Other than Educational Institutions.* Washington, D. C., December 1972.

Friedman, B. D. *Grants Management: The Office of Education and State Education Agencies.* Public Administration Service, Chicago, 1972.

Horngren, C. T. *Accounting for Management Control.* Second Edition. Prentice-Hall, Englewood Cliffs, New Jersey, 1970.

Lewis, M. O., and **P. Bowers** (Eds.). *The Foundation Directory.* Fourth Edition. The Foundation Center. Distributed by Columbia University Press, New York, 1971.

National Science Foundation. *NSF Grant Administration Manual.* Washington, D. C., October 1973.

National Science Foundation. *Pre-service Teacher Education Program: Guide for Preparation of Proposals.* Washington, D. C.

National Science Foundation. *Instructional Improvement Implementation: Guide for Preparation of Proposals and Operation of Projects* (Pre-College). [Request by year; closing date for an academic year is August 1 preceding that year.] Washington, D. C.

Sclar, Deanna (Ed.). *Annual Register of Grant Support, 1973-1974.* Academic Media, Orange, New Jersey, 1973.

U. S. Office of Management and Budget. *Catalog of Federal Domestic Assistance.* U. S. Government Printing Office, Washington, D. C., 1972.

CHAPTER **EIGHT**

Project Management

The two major responsibilities of project management are

1. attainment of the goals of the project, and
2. fiscal credibility while attaining these goals

Chapters 1 through 7 from planning through operational stages are *all* management responsibilities. Policy, organization, and decision-making are involved in meeting all the requirements efficiently, raising the questions of

- Who sets policy?
- What is the organization for management?
- How are decisions to be made?

Policy Definitions and Procedures

Policy definitions and policy-making functions must be established by the time the project is ready to begin work—and usually according to two levels of priority:

1. The funding source and the regulations by which it is governed take precedence over the project or grantee in policy determinations.
   a. If the funding source is a school district, basic policy will be set by the local Board of Education in consultation with the Superintendent of Schools.
   b. If it is a university, financing its own departmental project, the basic policy will be the university's, as regulated by its Board of Regents or Trustees—and, for a state university, the state legislature.
   c. If it is an outside agency—a foundation or state or federal source—then it will invite the project to make policy recommendations as a part of the request for funding and will pass on them or amend them as necessary to fulfill its specifications for approving a grant.

2. The second level in defining policy should be reserved for the project's own policy-making body—an Advisory Committee or Trustees if one of these groups exists and has been given policy functions.
   a. As an alternative, the fiscal parent organization or grantee would be willing to take responsibility for a fiscally dependent project's policy decisions, but unless the project is wholly internal to the parent organization, these powers probably are best vested elsewhere. Among the reasons are:
      1) division of interest (the parent organization has its own mission or primary purpose and cannot fairly keep the project's uppermost in its consideration)
      2) differences in procedures (too many procedures of the parent organization may stem from other policy-making sources—its Board of Regents or Trustees, a state legislature, or another source unrelated to the project or its national goals [see Chapter 7])
      3) limited access to specialists (the particular group of specialists who could be most helpful to the project probably are not concentrated on the staff of one institution but are dispersed among many institutions located in different parts of the country)
   b. The project should have one of several policy-making provisions. If it is a fiscally independent project, then as a nonprofit corporation it probably has a Board of Directors or Trustees to set or approve its policy. If it is a fiscally dependent project, it should have an Advisory Committee (pages 23 and 72) to help it determine, extend, and review policy. Either type of group could meet periodically in consultation with the project's manager or management staff.

The chief importance of a Board of Directors or an Advisory Committee (to whom travel allowances and honoraria can be paid) is securing time and attention from a group qualified to review the mission and affect its reflection in the progress of the project. From time to time this group can be called together from wherever its members live or carry on their regular work. Though this elaborate arrangement may not be possible for a very small project, correspondence by mail with selected specialists (on the target population or the curriculum) can serve some of the same purposes. For a larger project, no effective way apart from Board or Committee membership may exist to bring many of these individually valuable persons and their talents to the project's assistance. Too few staff positions are available within the project itself, and few of the needed individuals would consider leaving their own posts for others that would be only temporary (often at less pay). Yet service in some capacity which can make the most of their contributions in the shortest span of time is often of interest to them—and the project's perspectives will be enriched while directions and policy are being explored by a group of the best-qualified individuals for this purpose.

The one disadvantage of a Board of Directors or Advisory Committee is that meetings scheduled more than once or twice a year grow very expensive. The talents of the project's management team or manager are important in maintaining progress even in the face of policy problems that arise between meetings. Often a smaller Executive Committee, elected by the members of the larger Committee or Board, can meet to discuss problems or concerns more frequently.

Even if a project is internal to a department of the parent organization it may seek to have outside advisors. But policy within the context of the requirements of the larger organization will be separate from the advisors' roles. That is, the management and financial policies will be those of the parent organization since the project is a part of it, but the curriculum development guidelines, which involve policy, too, may be left to the departmental or project staff and its outside advisors. (At most the parent organization may request the right of approval of the advisors who are selected by the departmental staff.)

The Project Manager

The first operative step of a new project's manager, or of the developer who is organizing a project, is to make a division of interests and policies clear to a prospective fiscal parent when an option exists on the selection of that organization (see Chapter 7). Copyright and royalty matters should also be settled as a part of any agreement that is entered.

The fiscal parent or grantee may conclude that it is being invited to accept responsibility without authority, and here the last advantage of an Advisory Committee comes into play: the names and reputations of its members must serve as the assurance the fiscal parent seeks. In this the obligation of the project to the fiscal parent organization is very real.

Any other questions the fiscal parent may have will center on the person who is to be project manager. Usually this position is filled by self-appointment—and agreeably so. The developer who has put together the curriculum plan, nourished its growth, enlisted qualified potential staff members and Advisory Committee members, campaigned for the project's support and funding, located its headquarters site, entered arrangements with the fiscal parent, and who subsequently sees the project funded and the plan come to life, has already exhibited all the qualities of leadership and organizational ability that designate a person as a capable project manager or director.

The manager's position may be considered for the duration of the project, or as a rotating assignment—and the election of members to the Advisory Committee may likewise be considered either way. The argument for rotation is to bring fresh points of view to the project; for a durational appointment, to insure stability. Both views have merits that extend to appointments for all the rest of the staff, and usually a compromise solution is effected that results in some ongoing positions and some rotating ones.

The Managerial Staff

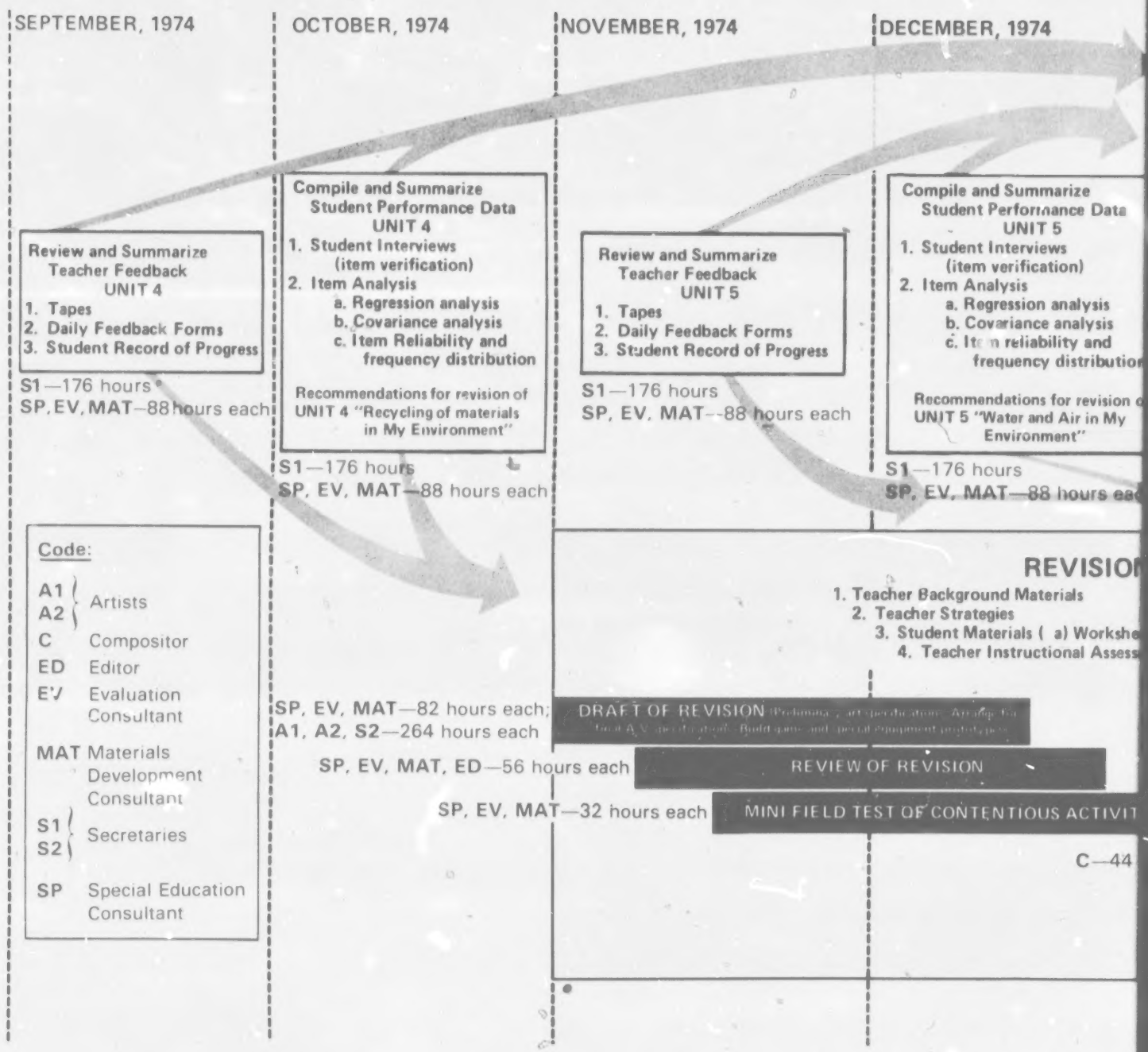
"Organization is alienation"—in this both anarchists and theorists are correct. Modern organizational theorists such as Yale University's Chris Argyris (1970) who hope to achieve a workable plan of organization *without* alienation are probably unrealistic. Any organization involves power relationships, and power relationships are personally alienating. But the management task is clear (Drucker, 1973):

> In an organization, jobs have to be designed, structured, and assigned. Work has to be done on schedule in a prearranged sequence. People are promoted or not promoted. In short, authority has to be exercised by someone.

Authority is an essential dimension of efficient group effort and work. It may become more or less noticeable according to how the project is structured for management, but it is inherent in the very fact of organization.

"Democracy" could otherwise begin with a project's originator turning over authority to the staff as a whole—and frequently a developer does delegate many administrative functions to someone else, but by specific appointment, and without relinquishing all authority. *Someone* must be responsible, or the support source would not agree to fund the work; committee responsibility is diffuse and inefficient.

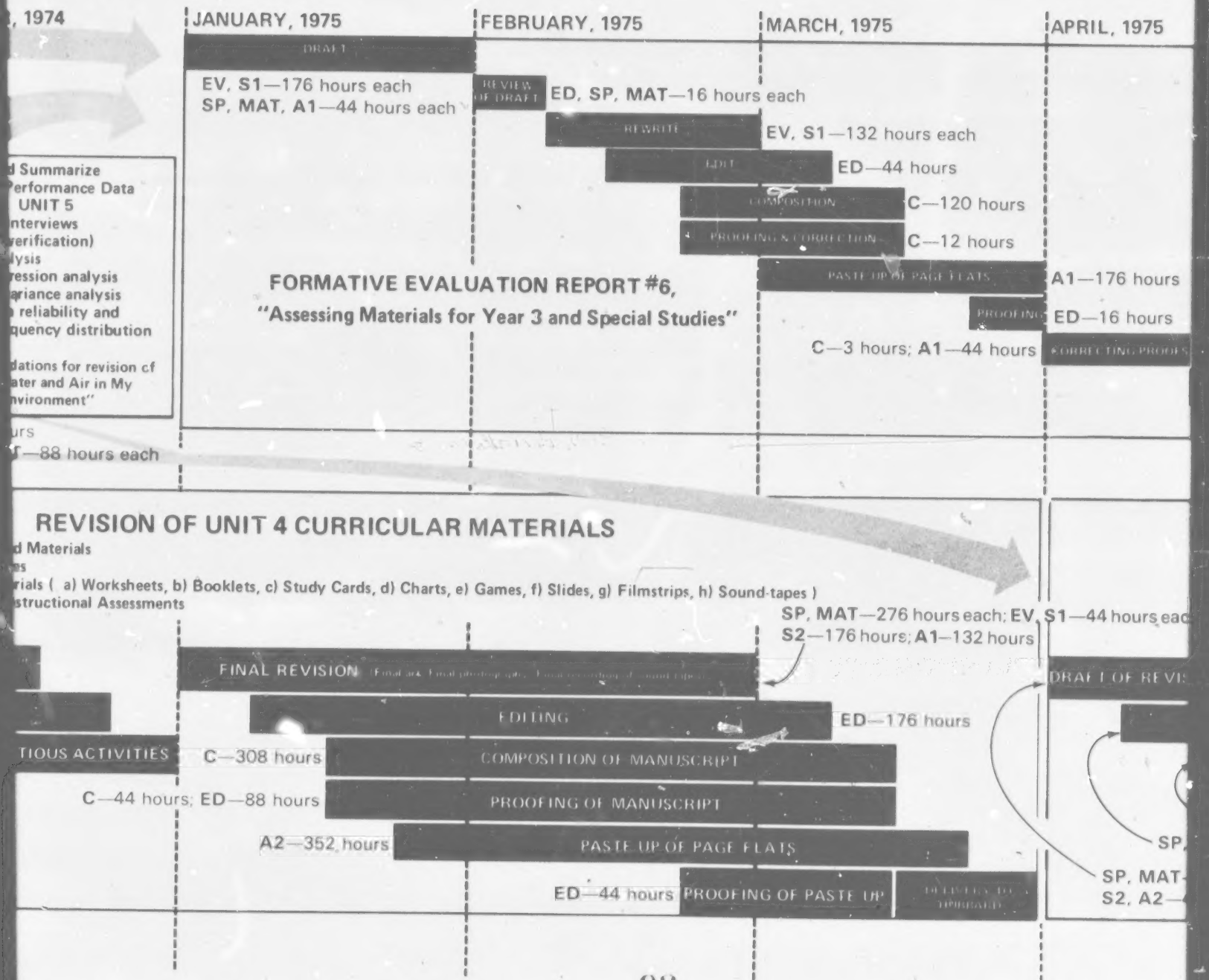
For a very small project these considerations may be academic: the manager is a manager-developer and the "staff" may be only one other developer, or perhaps two and a secretary.


SEPTEMBER, 1974
OCTOBER, 1974
NOVEMBER, 1974
DECEMBER, 1974
Review and Summarize Teacher Feedback UNIT 4
1. Tapes
2. Daily Feedback Forms
3. Student Record of Progress
S1—176 hours
SP, EV, MAT—88 hours each
Compile and Summarize Student Performance Data UNIT 4
1. Student Interviews (item verification)
2. Item Analysis
a. Regression analysis
b. Covariance analysis
c. Item Reliability and frequency distribution
Recommendations for revision of UNIT 4 "Recycling of materials in My Environment"
S1—176 hours
SP, EV, MAT—88 hours each
Review and Summarize Teacher Feedback UNIT 5
1. Tapes
2. Daily Feedback Forms
3. Student Record of Progress
S1—176 hours
SP, EV, MAT—88 hours each
Compile and Summarize Student Performance Data UNIT 5
1. Student Interviews (item verification)
2. Item Analysis
a. Regression analysis
b. Covariance analysis
c. Item reliability and frequency distribution
Recommendations for revision of UNIT 5 "Water and Air in My Environment"
S1—176 hours
SP, EV, MAT—88 hours each
Code:
A1, A2 Artists
C Compositor
ED Editor
EV Evaluation Consultant
MAT Materials Development Consultant
S1, S2 Secretaries
SP Special Education Consultant
REVISION
1. Teacher Background Materials
2. Teacher Strategies
3. Student Materials (a) Worksh
4. Teacher Instructional Assess
SP, EV, MAT—82 hours each; A1, A2, S2—264 hours each
DRAFT OF REVISION
SP, EV, MAT, ED—56 hours each
REVIEW OF REVISION
SP, EV, MAT—32 hours each
MINI FIELD TEST OF CONTENTIOUS ACTIVIT
C—44

BSCS/EMH ME AND MY ENVIRONMENT CONTRACT FOR EVALUA

Unit 4, "Recycling of Materials in My Environment" —— U

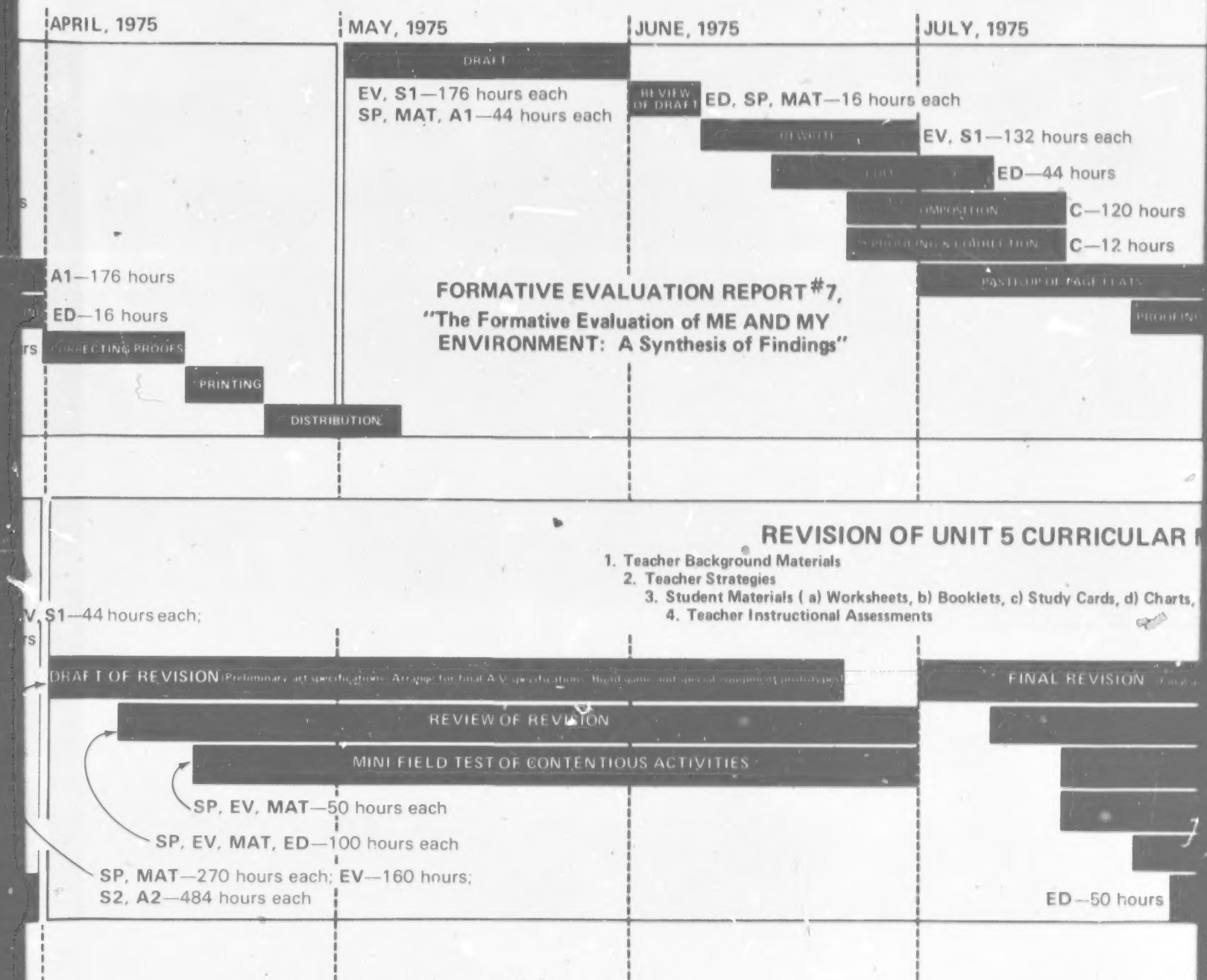
September 1, 1974 through Octo

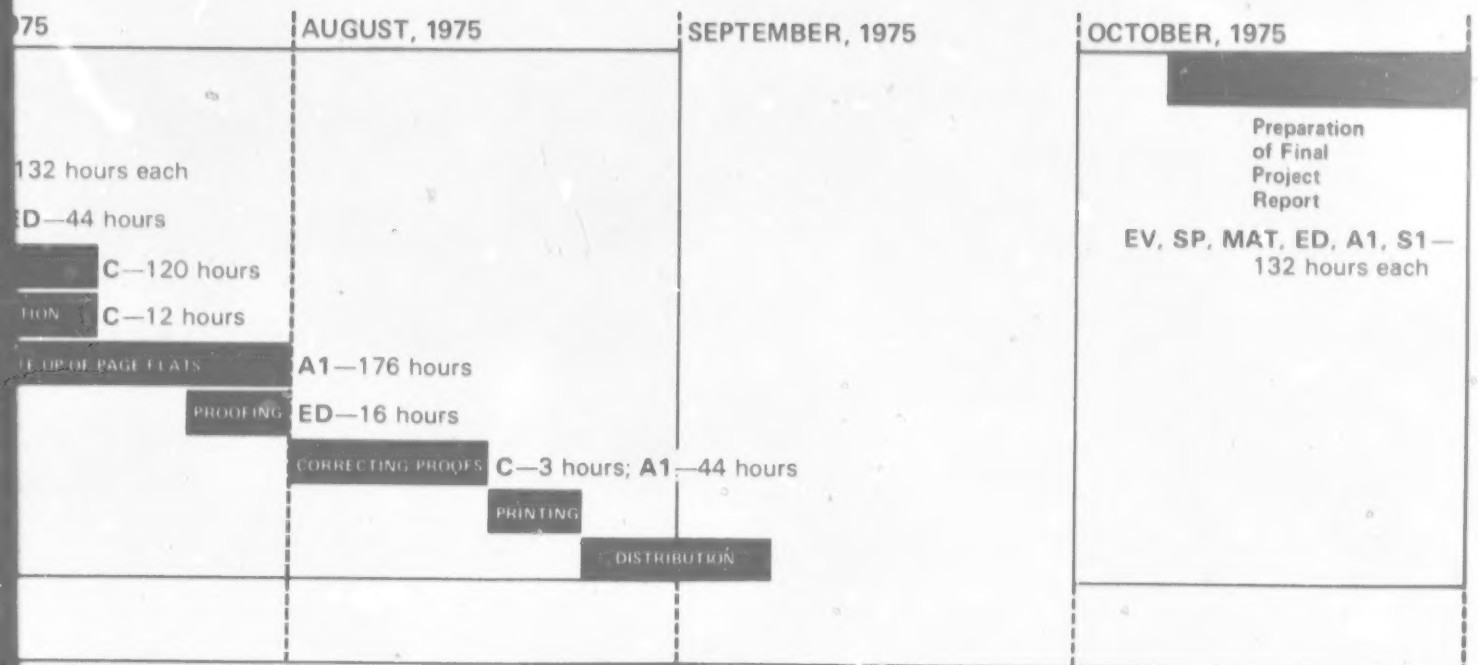


T FOR EVALUATION AND REVISION FOR COMMERCIAL RELEASE

onment" —— Unit 5, "Water and Air in My Environment"

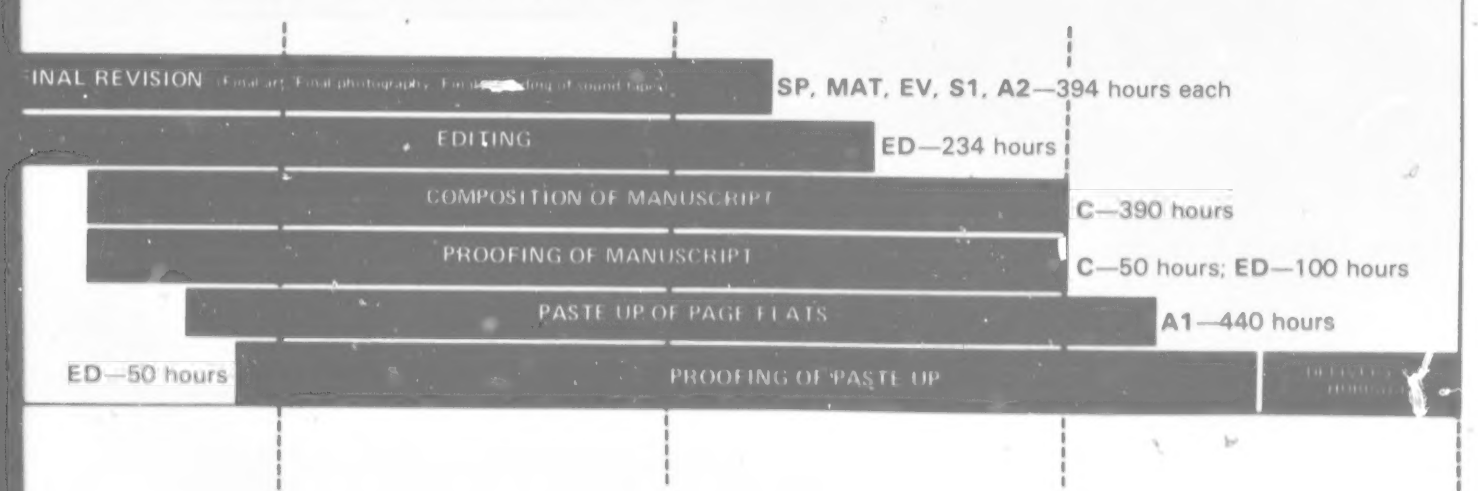
1974 through October 31, 1975





CURRICULAR MATERIALS

c) Study Cards, d) Charts, e) Games, f) Slides, g) Filmstrips, h) Sound-tapes)



Even for larger projects the delegation of many administrative functions makes a combined manager-developer's position feasible. If the project is fiscally independent, the primary and delegated administrative positions may be:

1. Manager-developer
2. Associate manager (for administration)
3. Treasurer } (for fiscal management, accounting, payroll,
4. Comptroller } purchasing, inventory, employee benefits and records)

There can be other centralized responsibilities as well: publications, under an editor, or more broadly, mediation, under a media director with a staff of artists, photographers, film and sound editors, etc.)

Alternatively, the project's originator may relinquish development tasks to others and devote full time to being manager in order "to stay on top" of all the following concerns:

- communication between the staff and outside individuals and groups
- communication within the staff
- schedule control
- budget control
- service support
- quality control
- evaluation of effort

How complex these matters can become is indicated by Project MORE's Implementation Lattice (following page 28) and by a further example with staff loading time added—for the BSCS project ME AND MY ENVIRONMENT (see accompanying foldout).

A scheme for evaluating the effectiveness of management in each of the foregoing roles needs to be devised; the most direct one is the listing of the two basic responsibilities at the beginning of this chapter, suggesting the satisfaction of the funding source that the project is accomplishing its planned work within the time and budget specified. But the quality and quantity of work even within the effectiveness of these criteria may vary considerably, and the project should set its own management evaluation standards and pinpoint difficulties and inefficient practices. Anything that can compromise the quality of the curriculum and its product, or the quality of input of those who are most closely concerned with it, should be reviewed and modified, or redirected.

A manager or management team that holds the functions of authority too closely can find that communication from the staff is impaired; one that does not provide safeguards for them at all may find the budget, the schedule, and the product all in difficulty. Somewhere in between is a confident level of open management, requiring a talent for "keeping the ball in play" instead of either keeping the ball exclusively or losing it.

When all the requirements of management are considered together, for any given project, the selection of the smallest size of managerial staff that can accomplish the required tasks should be made. Unnecessary levels of management interfere with direct communication and make the management responsibility diffuse. (No one on the staff should ever need to ask where to take a problem of a particular kind.)

From the perspective of the project's support source a separate and more compelling reason exists for keeping the size of the management staff to a minimum. Senior management personnel often are more highly paid than other members of the staff, though exceptions exist (see following page). Fiscal efficiency makes the smallest possible administrative structure a major factor in obtaining financial support for a development project.

Occasionally a project manager or director may define a salary in excess of his own, as a means of attracting one or two particular individuals to the project:

1. Usually the reason is so specific as to suggest that completing the project will require the services of these individuals.
2. Often the term is equally specific—most frequently one year.
3. And barring a possibility that the selected individuals can take a sabbatical year to work with the project, the very high salaries may have to be paid.

One highly paid position may be kept open from year to year, and the opinions of the person filling it may become the governing ones during his or her appointment to the position. When the operational stage of the project changes, accommodation to the change may be made by asking a person of a different specialty to fill the position for the coming year. Offsetting the high cost of such a position, the project may have only one other senior developer (or the manager-developer), with the rest of the staff constituted of younger or less experienced developers and research associates. The latter help give the staff continuity and stability; the former, direction and credibility.

Alternatively, all the staff may be hired with stability in mind, and the Advisory Committee may be charged with direction and all major decisions affecting credibility. Rotation or retention of personnel may be reviewed only if budgetary or other circumstances change.

Overall, the budget determines the staff that can be assembled and maintained, and for a short-term project many of the other considerations do not apply. For both short- and longer-term projects, the project's director or manager-developer will be its senior individual (whether the most highly paid), and *most* of the staff will be mixed middle-income curriculum personnel and trainees. If the project will have a long life, promotions from within will change the status of some staff members, and either rotation or resignations will create at least a few vacancies—that on being filled again will bring some new points of view to the project.

Special problems, or restricted degrees of freedom in staff selection, accompany projects that are internal to a parent organization. Factors favoring staff selection from existing personnel include

a. stability (or avoiding new staff appointments or staff changes)
b. familiarity with the parent organization's procedures and policies
c. availability (existing personnel may have time free for other responsibilities)
d. budget (adding someone from outside involves another salary)

Often the project staff is wholly limited to existing personnel, and the problem becomes the best possible selection from among them. If someone from outside is considered *essential* to the project, then someone inside the parent organization may have to leave it, to enable the budget to be kept in balance. Natural staff attrition can help; someone well removed from the project's work may resign and enable an entire series of internal transfers to be effected, ending in a vacancy to be filled in association with the project. This is an example of *planned organizational change* in response to a prediction or occurrence of a staff resignation by someone who indirectly makes a budgeted new position available.

Effecting personnel changes on any other basis is increasingly difficult for an educational institution because of legal procedures against discrimination for any of many possible causes. Management planning is often confused with discrimination by the affected employees whether or not the charge has a basis in fact; costly and time-consuming court procedures may follow. Such questions over management judgments highlight the importance of planning any rotating staff assignments in advance.

As for planned organizational change otherwise, often proposed as a modern

policy in management, the problems of a curriculum development project are usually limited to a short enough duration of time to avoid midstream recalculations in any major sense. Rotations of certain positions may be a part of the plan but, once the work is in progress, a broader new organizational plan should be resorted to only if the curriculum and its product are in jeopardy. This suggests caution in response to the common observation:

> At the first sign of any trouble...the cry goes out for the "organizational doctors," whether outside consultants or inside staff (Drucker, 1973).

Change in such an atmosphere is a form of surgery, which implies risks. Any unnecessary change may be hazardous if undertaken when the responsibilities of the project are generally being met and the problems are relatively few. The mission, in summary, is *not to study organizational planning but to develop a curriculum and its product*, and a certain amount of friction may be tolerated if time will otherwise be sacrificed beyond return in the quality of the product.

For inquiries on specific problems or practices in management the authors' projects provide a rich source. These projects are listed immediately following this chapter, and the contributing authors themselves are listed with their current addresses in the front of the book, on the title page.

Bibliography

Argyris, C. *Personality and Organization.* Harper & Row, Publishers, New York, 1970 (paperback).

Cook, D. L. *Program Evaluation and Review Technique: Applications in Education.* Cooperative Research Monograph 17, U. S. Office of Education, Department of Health, Education and Welfare. OE-12014. U. S. Government Printing Office, Washington, D. C., 1966.

Drucker, P. F. *Management: Tasks, Responsibilities, Practices.* Harper & Row, Publishers, New York, 1973.

Hack, W. G. *et al* (Eds.). *Educational Administration: Selected Readings.* Second Edition. Allyn & Bacon, Boston, 1971.

Handy, H. W., and **K. M. Hussain.** *Network Analysis for Educational Management.* Prentice-Hall, Englewood Cliffs, New Jersey, 1969.

Maxson, R. C., and **W. E. Sistrunk.** *A Systems Approach to Educational Administration.* William C. Brown Company, Dubuque, Iowa, 1973.

Moder, J. J., and **C. R. Phillips.** *Project Management with CPM & PERT.* Second Edition. Van Nostrand-Reinhold, New York, 1970.

THUMBNAIL SKETCHES

I CAN

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The full title of this project is "Programmatic Research in Physical Education for Mentally Retarded Children and Youth," but it has become known by the name of its curricular materials—I CAN.

Funded by the Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education and Welfare, the project is charged with developing, evaluating, and disseminating individualized physical education curriculum materials for mentally impaired children and youth.

The instructional materials are assembled into teaching modules which, together with the teacher's guide, provide a sequential personalized physical activity program to accomodate each learner. I CAN is focused on developing the skills and abilities which enable social-leisure competence commensurate with the potential of each learner. The initial curriculum materials are directed toward the preschool through primary age group, 3-14 years. *Primary Skills Modules* are: 1) Aquatics; 2) Body Management; 3) Fundamental Skills; and 4)Health/Fitness. The *Leisure Modules* (to be developed) encompass activities in Dance, Neighborhood Games, Outdoor Education and Camping, and Special Games/Events. In addition, *Affective* and *Cognitive Modules* will become essential features in each *Primary* and *Leisure Skills Module*.

I CAN features:

1. A procedural model for systematic program planning
2. *Criterion-reference measures—diagnostic tools* to assess student entry skill level; need assessment on instructional objective
3. *Prescriptive teaching/learning activities* coded to needs assessment
4. Teaching/learning activities directly linked to specified objectives and teaching suggestions for both P.E. specialists and classroom teachers
5. Mechanisms for *reporting pupil progress and for record keeping*
6. A structure conducive to cross connecting the objectives germane to physical activity with those of the classroom such that the learner and the teacher have *Active Learning Strategies*, the associated learnings

The I CAN Program has been packaged to facilitate the incorporation of its individual components into existing curriculums, and for developing new and unique curriculum programs at the local level personalized to the school setting.

A commercial edition of the initial materials is being produced and distributed by HUBBARD, 2855 Shermer Road, Northbrook, Illinois 60062.

Project MATH

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Project MATH is a five-year research and demonstration project supported by the Bureau of Education for the Handicapped, U. S. Office of

Education, Department of Health, Education and Welfare. As a result of research and demonstration efforts a comprehensive curriculum system has been developed for the teaching of mathematics to educable mentally handicapped children from preschool through high school, and to other children with special learning needs in the preschool and elementary school years. This system is comprised of lesson guides for the directed teaching of skills and concepts in the areas of numbers and operations, sets and operations, patterns, fractions, geometry, and measurement; a comprehensive parallel system for fostering verbal problem-solving skills; and a series of laboratory experiences for the application of arithmetical concepts in applied social settings.

One basic philosophical premise underlies the curriculum development effort: to provide teachers with multiple options in meeting the mathematics learning needs of handicapped learners. The curriculum reflects a commitment by the project staff to maintain the integrity of the mathematics content, tailoring the presentation of that content to interests, background, and capabilities of the handicapped learner. A variety of means for teacher presentation of content and a variety of ways for the learners to demonstrate competence are provided within the curriculum. Implicitly rejected in the development effort is the belief that symbolic work, often rotely performed, is necessarily the highest level of cognitive response. Thus, the creative use of manipulatives and pictorial aids is encouraged throughout the program. Additionally, learners are encouraged to use mathematical skills as a vehicle to higher cognitive processing and creative behavior.

For the teacher, Project MATH does not represent a set of material to be used in a set linear sequence. Rather, the teacher is encouraged to individualize her presentations in response to her own curriculum priorities and to the unique learning needs of the children. The curriculum recognizes the role of the teacher as a curriculum developer and decision-maker and encourages the development of that role. The necessary diagnostic-prescriptive tools and materials are included to pinpoint (in each area and at each level) the most effective use of the curriculum with each child.

Following field-testing, evaluation, and revision, the curriculum's materials have been reviewed in their final format and released to Educational Sciences, Inc., Wallingford, Connecticut 06492, for commercial publication and distribution.

Inquiries may be directed to the publisher or to the Project MATH staff at the University of Connecticut (see address on preceding page). Publication is expected to be completed in 1975.

ME NOW and ME AND MY ENVIRONMENT

Biological Sciences Curriculum Study

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The Biological Sciences Curriculum Study is a nonprofit educational corporation devoted to improving biological science (and science-related or interdisciplinary) education at all levels, from kindergarten through college, and for all children, from the educable mentally retarded to the gifted. Many different curriculum development programs and their materials are part of this overall effort; two of these programs are ME NOW and ME AND MY ENVIRONMENT.

ME NOW is a two-year life sciences program for upper elementary—and ME AND MY ENVIRONMENT a three-year program for junior high school—educable mentally handicapped students. Designed to be used by teachers who have no special training in science education, the two programs have as their common central elements *Teacher's Guides* that introduce teachers to the inquiry method of teaching and learning. Detailed suggestions for teacher-student dialogs appear in the Teacher's Guides for almost all activities; the students' roles in these dialogs are predicted based upon two comprehensive cycles of field tests and subsequent activity revisions. Materials kits and instructions in necessary science techniques are supplied.

The student does not see a book but rather a teacher who is a rich source of things to investigate—and an invaluable facilitator in asking the right questions and making available materials to help in planning how each thing might be investigated. But the student plans and carries out the investigation. The range of activities guarantees the learners frequent experiences of success (fulfilling the first goal of the programs—improved student self-expectancy, derived through a success "syndrome").

The student makes use of worksheets, laboratory equipment, sound tapes, slides, filmstrips, film loops,

booklets, games, models—all supplied—and familiar items from school and home. The classroom becomes a busy activity center, into which other students from other classrooms may frequently look to view the "hands-on" or learning-by-doing opportunities afforded. (Occasionally children from regular classes have asked for transfer to special education classes, and another program for normal learners, at the elementary school level, is in preparation.)

Behind most of the busy classroom activity is a partly hidden agenda (the curriculum at work) that emerges at each student's individual bidding to be discovered in whole, or only in some comfortable part, depending on the student's cognitive and functional abilities.

Both programs—ME NOW and ME AND MY ENVIRONMENT—are nongraded but evaluated, and both have been supported in their development by the Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education and Welfare. Commercial editions (following the two cycles of field tests, evaluation, and revision) are produced and distributed by HUBBARD, 2855 Sherwer Road, Northbrook, Illinois 60062.

Project MORE

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Project MORE (Mediated Operational Research for Education) is funded by the Bureau of Education for the Handicapped, U. S. Office of Education, Department of Health, Education and Welfare, and is a component of the University of Kansas Bureau of Child Research (directed by R. L. Schiefelbusch, Ph.D.). Located at Parsons State Hospital and Training Center, Project MORE is an outgrowth of the Mimosa Project (see Lent, 1968, page 22). Mimosa's goal was to train the retarded girls of Mimosa Cottage so that they could make a successful transition from an institutional setting to the community. The success and experience gained provided the basis for proposing that careful systematic development could produce valid and effective programs applicable to any training environment.

Today Project MORE is engaged in designing and developing these systematic training packages for the trainable mentally retarded. One component of the project is developing instructional packages in daily living skills and investigating the social living skills. Another component, located at George Peabody College for Teachers in Nashville, Tennessee (and headed by James E. McLean, Ph. D.) has developed a systematic program for modification of errors in speech articulation by the retarded.

The research staff lays the groundwork for the programs, developing task analyses and teaching strategies, testing these strategies, and drafting rough copy for the programs. The mediation staff makes program and format analyses for effective use of media to make the programs readily usable by the consumer, and produces the programs in their finished form.

The first three program areas are Eating Skills, Personal Hygiene, and Personal Appearance, in which numerous programs* have been completed. Arrangements for commercial distribution of these and other, forthcoming daily living skills programs, as well as for the stimulus-shift (speech articulation) programs, have been made with Edmark Associates, 13249 Northup Way, Bellevue, Washington 98005.

SOCIAL LEARNING CURRICULUM

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Foundations of the Social Learning Curriculum

The structure and content of the Social Learning Curriculum is based on experience and research. Since the early 30's, follow-up studies of post school-age retarded persons have revealed that the success or failure of the individual to adapt and to function

**Hair Rolling Program, Toothbrushing Program, Face Shaving Program, Leg and Underarm Shaving Program, Eating Skills for Daily Living Program, and others.*

independently in his society is determined primarily by the level and range of his social sophistication and, to a lesser degree, by his speed and accuracy on the job. Experience also shows that there is general agreement that the educational program for the retarded *should* represent an appropriate balance between well-structured and relevant social adaptation concepts, and facts and academic skills. In actual practice, however, such programs are typically concentrated on academic skills with only coincidental and random inclusion of social learning experiences.

Insofar as structure of the curriculum is concerned, research has shown that the typical curriculum guide falls far short of its intent as an educational document. It was found that the limited nature of content and the lack of developmental guidelines prevent effective application by all but a small proportion of teachers.

Taken together, these facts indicate that a curriculum for the EMR needs to consist of content that stresses social learning with an appropriate balance of academic learning. Further, they indicate that the structure of the curriculum needs to be detailed and explicit due to the abstract nature of social learning concepts and facts and their vulnerability to misinterpretation. To put it another way, in order for teachers to insure the relevance and continuity of their programs, teaching materials and aids need to be as detailed as possible. This is not necessarily a reflection on the competency of teachers as much as it is a reflection of the ambiguity of the language of education.

Content of the Social Learning Curriculum

The project's objective is to specify the content of the Social Learning Curriculum so that it will be responsive to both the immediate and long-term needs of the retarded. Toward this end, the curriculum contains content that reinforces positive behaviors and, at the same time, anticipates and counteracts the emergence of negative behaviors in areas of social function crucial to successful adaptation. The negative behaviors were detailed for the project's staff by vocational rehabilitation counselors and other professionals in close contact with mature retardates.

The strategy for setting forth curriculum content focused on the defeating behaviors of mature retardates, in that these behaviors were translated into positive objectives. Following this, the concepts and facts underlying each behavior were organized in a developmental sequence of learnings and experiences and formed into teaching-learning transactions. Briefly, the project proceeded with the notion that all behaviors are need-fulfilling in some important way. At the same time, society prescribes the limits for appropriate behaviors for need fulfillment and has ways of punishing those who persist in violating its limits. The purpose of the Social Learning Curriculum is to help EMR children learn cognitively and affectively to fulfill the needs common to all of us within the bounds established by society.

The Social Learning Curriculum is developmentally organized and represents content that is organized into the important social environments through which all children pass on their way toward adulthood. (See the "expanding environment" model, page 12).

The style in which the Social Learning Curriculum is being developed reveals a philosophy of curriculum development as well as how people play productive roles in this process. The first draft is developed by specialists who have available to them the time, facilities, and resources necessary to exploit the vast and diverse array of knowledge that needs to be searched out and synthesized into educational formulas. Such a version, however, remains an intellectual exercise until it is put to use in an educational setting under the watchful and critical eye of a professional teacher. This is accomplished in field testing. The field testing is more than a quality control measure since, during field testing, the teacher makes an important contribution to curriculum development. It is during this period that the teacher employs experience and knowledge in making recommendations for refinement, revision, and modification of the materials placed in his or her hands. Thus, the teacher as a curriculum developer is an indispensable member of the total program.

The Charles E. Merrill Company, 1300 Alum Creek Drive, Columbus, Ohio 43216, has been selected to publish and distribute the commercial editions of the Social Learning Curriculum's materials.